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SYNTHESIS REPORT

ASSESSMENT AND PLANNING OF THE TORONTO CITY REGION FOOD SYSTEM

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Authors
S. Miller and A. Blay-Palmer. 2018. Assessment and Planning of the Toronto City Region Food System - Synthesis Report. Prepared for the RUAF Foundation.
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Published by
RUAF Foundation
and
Wilfrid Laurier University, Centre for Sustainable Food Systems
and
the Food and Agriculture Organization of the United Nations

ISBN 978-92-5-130867-7 (FAO)

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FOREWORD

Cities and their surrounding areas, known as 'city regions', are increasingly concerned about food security and how it is affected by urban growth, escalating urban poverty, food price hikes, climate change, changing consumption patterns and the rise in diet-related health problems. Of particular concern is urban growth, which creates increased demand for the same land and water that also provide vital food and ecosystem services. This challenge calls for integrated territorial development and balanced urban–rural linkages for the benefit of urban and rural population alike. The city region food system (CRFS) perspective provides a platform on which to build concrete policy and offer investment opportunities to address these developmental issues with the objective to achieve better economic, social and environmental conditions in both urban and surrounding rural areas. Strategies and tools include: the promotion of peri-urban agriculture; the preservation of agricultural land areas and watersheds through land use planning and zoning; the development of food distribution systems and social protection programmes; support for short supply chains and the local procurement of food; and the promotion of food waste prevention, reduction and management.

Building a sustainable and resilient CRFS, however, requires political will – integrating available policy and planning instruments (e.g. infrastructure, logistics, public procurement, land use planning), involvement of various government departments and jurisdictions (local and provincial), and inclusive organisational structures at different scales (municipal, district, etc.). An effective CRFS offers a lens through which this integration and coherence can be addressed at a specific territorial level. CRFS can also operationalise linkages between Sustainable Development Goals: SDG 2 (food security, nutrition and sustainable agriculture); SDG 11 (inclusive, safe, resilient and sustainable cities); and SDG 12 (sustainable production and consumption).

CRFS implementation is in line with the recently adopted New Urban Agenda (October 2016) that emphasises the need for cities to "strengthen food system planning" and recognises the vulnerability of long-distance food supply systems. The Milan Urban Food Policy Pact – the first international protocol, currently signed by more than 160 cities, including the cities in this series of reports – also calls for the development of more sustainable and resilient urban food systems. Signatory mayors from cities around the world pledged to develop actions and strategies to improve their urban food systems with strong urban–rural linkages.

FAO and RUAF Foundation partnered to support local institutions in understanding and operationalising a CRFS in seven cities selected from across the globe to represent their regions – Lusaka and Kitwe (Zambia), Colombo (Sri Lanka), Medellín (Colombia), Quito (Ecuador), Toronto (Canada) and Utrecht (The Netherlands). All results presented here describe the experiences from each city in terms of planning and informed decision-making, prioritising investments and design of sustainable food policies and strategies to improve the resilience and sustainability of the entire food system. Combined, this CRFS knowledge culminates in a set of tools to support individual city regions around the world to assess and better plan their own food system.

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PREFACE

Food, and efforts to support sustainable food systems, facilitate joined up policy and engagement across different city departments and multiple sectors. The City Region Food System (CRFS) research in the Toronto Greater Golden Horseshoe (GGH) and resulting analysis and recommendations helped facilitate cross- jurisdictional connections as well as strengthen rural, peri-urban and urban linkages. Additionally, it brought together different City of Toronto Departments who might not normally work together (e.g. Toronto Public Health and Economic Development).

Since the end of the GGH CRFS process in June 2017, there has been significant food policy activity at multiple scales. For example, as outlined in the 2017 Growth Plan for the Greater Golden Horseshoe: "Municipalities are encouraged to implement regional agri-food strategies and other approaches to sustain and enhance the Agricultural System and the long-term economic prosperity and viability of the agri-food sector, including the maintenance and improvement of the agri-food network by:

- providing opportunities to support access to healthy, local, and affordable food, urban and near-urban agriculture, food system planning and promoting the sustainability of agricultural, agri-food, and agri-product businesses while protecting agricultural resources and minimising land use conflicts;
- protecting, enhancing, or supporting opportunities for infrastructure, services, and assets…; and
- establishing or consulting with agricultural advisory committees or liaison officers."

In addition, the Canadian Federal Government is moving towards a National Food Policy and released a Standing Committee report in December 2017 that includes consensus on the importance of mid-level infrastructure for the future Canadian food system. While no straight lines can be drawn from the CRFS work in Toronto to these policy initiatives, we can conclude that the strong and long-term food policy leadership in Toronto that is captured in and continued through the CRFS work helped to shape these other food policy initiatives directly or indirectly. There are also other food policy initiatives within the city, including a reinvigoration of the Toronto Food Strategy, that are informed directly by the CRFS work.

The CRFS work also served to deepen linkages between existing networks, including the Toronto Food Policy Council and the Greater Golden Horseshoe Food and Farming Alliance. Both these organisations enjoy active engagement of City of Toronto Councillors as well as City staff. Their collaboration has resulted in such initiatives as Urban Agriculture tours for rural members and region/peri urban tours for urban practitioners; implementation of Food, Farming and Health professional development initiatives, data sharing and collaboration in initiatives to increase procurement of local food in City institutions. Overall, a City Region Food System approach helps facilitate a more integrated, just and efficient food system in the Toronto Region.

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ACKNOWLEDGEMENTS

This synthesis report is extracted and adapted from three earlier Toronto City Region Food System reports by S. Miller with supporting work by A. Blay-Palmer at the Laurier Centre for Sustainable Food Systems as well as Marielle Dubbeling from the RUAF Foundation. Research support was provided by N. Godfrey. Input and support was also provided by the Toronto City Region Food System Task Force: L. Baker (Toronto Food Policy Council), B. Emanuel (Toronto Food Strategy), M. Flaherty (Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)), H. Friedmann, J. Horner (Golden Horseshoe Food and Farming Alliance (GHFFA)), J. James (OMAFRA), R. MacRae (York University), R. Martin (University of Guelph), J. Reeve (Toronto Food Policy Council), M. Wolfson (City of Toronto, Food and Beverage Sector Specialist), F. Yeudall (Ryerson University) and A. Blay-Palmer (Centre for Sustainable Food Systems at Wilfrid Laurier University). Early drafts were revised with input from A. Blay-Palmer and L. Baker. We are also grateful to L. Stahlbrand and B. Emanuel for reviewing this final synthesis report. Thanks to L. J. Roche (Toronto Public Health) for managing logistics and careful note-taking for Task Force meetings. Thanks to Toronto Public Health for hosting the Task Force meetings. The author and research team acknowledge with gratitude the generous time and thought that stakeholders have invested in this project.

The authors also acknowledge the project partner FAO for their overall technical support.

The authors would like to thank the Carrasso Foundation and the German Federal Ministry of Food and Agriculture for providing financial support for the implementation of the overall Programme and for supporting the implementation of the city region food system assessment in Toronto.

EXECUTIVE SUMMARY

Toronto and the Greater Golden Horseshoe City Region Food System

More than 80 percent Canadians live in cities with almost one-quarter of country's total population living in the Greater Golden Horseshoe (GGH) area. The GGH stretches in a curve around the western side of Lake Ontario with the City of Toronto occupying the northern side of the horseshoe. The GGH is an area of high potential food production as well as rapid population growth creating a mix of difficult to reconcile, opposing demands. For example, the need for housing and residential infrastructure conflicts directly with the need to preserve prime agricultural lands. Food insecurity is another significant challenge for Toronto and its surrounding areas as underscored in recent initiatives. The City of Toronto's 'Neighbourhood Equity Index' shows some communities facing difficulties accessing healthy food. In considering the links between rural and urban areas, the 'Cultivating Food Connections' study determined that expenditures are not going to local farmers or local economies with the average journey for food from farm to table in 2015 estimated at 4 497 kilometres. It was in this context that the vision for a sustainable city region food system in Toronto was defined as: Healthy food for all, sourced as regionally as possible, and as sustainably produced, processed, packaged, and distributed as possible.

Who feeds the city region?

The GGH food from production through to consumption is complex and economically significant. According to the 2015 GHFFA report there were 630 325 jobs for the entire food value chain. Emissions from the food system overall are estimated to be 831 903 tonnes CO_2.

Food production

There were 19 266 farms in the GGH in 2015 with 35 584 full-time year-round workers in primary agriculture – farmers, farm managers and farm-related jobs. The GGH experienced a decline in farmland of more than 65 000 hectares between 2006 and 2011, equal to about 4.4 percent of its agricultural land representing an area larger than the City of Toronto. While farmland is being lost, farm size remains mid-scale on average. While acreage is being lost, alternatives are emerging including an estimated 218 certified organic farms, 54 transitional farms and more than 100 food growing gardens on City of Toronto property. Agriculture is a significant part of the provincial economy. The total agricultural revenue for the GGH is more than CAD 12 billion annually. Farming in the GGH is more labour intensive as more production is in horticulture and organic farming. Despite this high economic activity, farm revenues have not changed in real dollars since the 1970s, while the cost of inputs, land and labour have steadily increased. Counties in the GGH produce enough oats and barley to meet local demand. Grapes, peaches, cabbages, sweet corn and peppers are in surplus

with deficits of apples, strawberries, green and wax beans, potatoes, carrots, tomatoes and onions, as well as beef and lamb. Currently, all vegetable deficits could be met provincially except for dry onions, cabbages, green and wax beans and potatoes.

Food processing and manufacturing

Food processing and manufacturing is concentrated in the study area with more than 50 percent of Ontario's food processing and manufacturing jobs in the GGH, valued at close to CAD 40 billion per year. Food processing accounts for over 200 000 jobs equal to 13 percent of all food-related jobs. The City of Toronto houses over 21 615 food manufacturing jobs and almost 17 percent of all food-related jobs in Canada. Except for labourers, pay levels in food manufacturing are high relative to other food sectors. Despite this robust presence, Ontario has steadily lost processing and other supply chain infrastructure over the last few decades. Despite the agri-food sector in the GGH showing a significant gap in fruit and vegetable preserving and meat product manufacturing, the GGH displays signs of increased processing capacity. Recent examples include new agri-food shipping terminal in Hamilton and a Tetra Pak facility in Toronto. In terms of environmental impact, food processing emits nearly 15 million tonnes of CO_2 and accounts for roughly 18 percent of waste across the supply chain.

Distribution

Food merchant wholesalers in the GGH employ 35 794 people, while farm product and beverage wholesalers add another 5 000 jobs. Emissions from the food system overall are estimated to be 831 903 tonnes CO_2 with more than 50 000 tonnes attributable to distribution. The sector accounts for about 3 percent of waste in the food system.

Retail, food service, restaurants, institutions

The food service sector is the largest and fastest growing of the food system sectors valued at almost CAD 41 billion annually for Ontario (Statistics Canada, 2015). In Toronto, the figures show that although grocery stores command a high percentage of sales, of the 68 percent of agri-food jobs in the food service sector, retail accounts for only 3 percent with the majority in food services (GHFFA, 2016). The number of jobs in the GGH for food retail total 130 972 with 345 924 in food service (GHFFA, 2016). Annual wages in this sub-sector are low ranging from CAD 21,000 to CAD 35,000. The contribution of these jobs to the local economy is probably lower than other sectors as corporate food outlets are owned by foreign or transnational companies in many cases. Likewise, large retail grocery chains annually widen their private label offerings, many of which are manufactured elsewhere and imported into Canada (GHFFA, 2016).

Consumption

Despite a wide diversity of sources and cuisines, food is not available equitably or evenly across Canada. Food insecurity varies between 10 and 17.6 percent in the GGH. While food takes up less than 10 percent of household income in Ontario, Toronto Public Health found that “Alongside hunger, approximately one in three Toronto children (age 2–11) is either overweight or obese”. A shift towards ethnocultural cuisine, which is often higher in vegetable ingredients, is predicted for the GGH as 40 percent of the population are currently newcomers. The World Crops Project has worked to develop varieties and markets for ethnocultural foods in the region to capture the market estimated at more than CAD 800 million.

Food and organic waste

The total annual waste for the GGH food system is estimated to be 207 326.5 tonnes with the value of discarded food in Ontario estimated at CAD 12 billion (Ontario Waste Management Association 2016). Few Canadian businesses realise the savings that could be generated from reducing (rather than disposing of or recycling) waste. Even on a relatively small scale, diverting waste into composting has been shown by organizations such as FoodShare in Toronto to save thousands of dollars annually in city processing costs.

Food flows

A food flow analysis of key foods – including carrots, apples, potatoes, chicken and eggs – was undertaken in 2016 as part of this CRFS project. The strong export focus of the food system made it difficult to track precise flows for any food category. The food flow estimates and case study research for the GGH confirmed that either: 1) food leaves the region while comparable foods are imported; for example, it is estimated that 25 percent of carrots produced are exported and 20 percent of carrots consumed are imported; or 2) production does not meet local demand; the deficit for carrots is about 2.9 million pounds, for apples 283 million pounds, for eggs 535 million dozen and for chicken meat 109 million kilograms. A key reason for these outflows is a lack of mid-scale infrastructure within the city region.

Policy recommendations (PR) were identified during the third phase of the CRFS research through expert group consultations. This process resulted in the identification of eight policy opportunities as key for the GGH (see Box 1). The top policy recommendation is to create mid-scale infrastructure, such as food hubs (PR#1), along with associated supports including financial, regulatory, public food procurement and educational supports to bolster regional food flows (PRs #3, #4, #7 and #8). The two remaining PRs are underway: 1) PR #5: An Ontario pilot project was launched to test a Guaranteed Minimum Income in three jurisdictions over three years; and 2) PR#6: An on-going consultation process is being led by the federal Department of Agriculture to identify whether to implement a National Food Strategy.

Box 1: Opportunities for strengthening the city region food system (CRFS). Stakeholder input identified eight key Policy Recommendations (PRs). As part of the policy and planning phase of the CRFS project, three food hub scenarios were developed (processing and distribution; distribution; and food access) and were explored through two focus groups. Scenario building results provided specific recommendations for finance, regulatory, planning and engagement initiatives needed to achieve these next steps.

- PR#1: Develop and support the transition to increased mid-scale infrastructure (regional processing, distribution, marketing) in order to reduce resource inefficiency from redundant trade, including traffic congestion and GHG emissions.
- PR#2: Establish financial resources that support a range of scales and stages, including small- and mid-scale.
- PR#3: Establish scale-appropriate safety and operational regulations and feasibility assessments for mid-scale infrastructure such as regional food hubs.
- PR#4: Increase research and educational opportunities directed at regional agriculture and regional infrastructure needs linked to shorter supply chains.
- PR#5: Provide sufficient social assistance, through a guaranteed income or other measures, to ensure that everyone can afford to eat locally produced healthy food.
- PR#6: Establish a national food policy and a national school food policy.
- PR#7: Ensure widespread formalization and implementation of public procurement policies for local and sustainable food (with percentages and budgets to meet policy goals).
- PR#8: Revise the labour practices, government support and subsidy programmes to ensure the necessary skilled labour for all food system areas with tenure security and fair compensation.

Since the end of the GGH CRFS process in June 2017, there has been significant food policy activity at multiple scales. The GGH 2017 Growth Plan calls for municipal food system planning, protection and preservation of agricultural landscapes and support to agri-food infrastructure development. The Canadian Federal Government reported on the importance of mid-level infrastructure in its December 2017 Standing Committee report. There are also new food policy initiatives with the City of Toronto that are informed directly by the CRFS work pointing to its potential to support planning and capacity building.

BACKGROUND

1

The City of Toronto and the Greater Golden Horseshoe combine the significant challenges of rapid urban population growth and regional agricultural needs with ground-breaking solutions, collaborations and sustainable initiatives. Toronto and the Greater Golden Horseshoe has been the subject of food system analysis, policy and planning over several decades.

The Toronto Food Policy Council (TFPC) was formed in 1991, and has since witnessed and inspired the formation of similar food policy councils nationally and internationally. The TFPC has been instrumental in the development of urban agriculture, aggregated local food distribution, health and nutrition through public health units and many other initiatives. As part of this work, Toronto adopted a food charter in 2001 and developed the Toronto Food Strategy with the final report in 2010. The Strategy, whose goal is to promote a healthy sustainable food system, has been the underpinning for Toronto's approach to food led by Toronto Public Health. More recently they participated in the planning and development undertaken by the Golden Horseshoe Food and Farming Alliance (GHFFA), expanding the frame to include the most rapidly growing urban population areas in Canada, and the most important agricultural lands that surround the growing municipalities.

Several not-for-profit organisations have also been pioneered in Toronto. FoodShare has been a leader in the development of sustainable solutions to food insecurity. The City established FoodShare in 1985 to combat hunger, but it eventually became a leader in solutions to the root causes of hunger (poverty, social inequity, commodification of food, etc.). FoodShare launched the first Good Food Box programme in 1994. The programme has since been replicated in many places. FoodShare also established Good Food Markets and Mobile Markets in urban areas with limited access to fresh, healthy and culturally appropriate food, created a commercial kitchen that provides training to urban youth facing employment challenges, and started a robust warehouse operation that accesses food from the Ontario Food Terminal and local farmers to supply the various programmes. The FoodShare hub distributes more than two million pounds of vegetables and fruits to Toronto families and organisations every year, including schools and day-cares. Among other programmes, Community Food Centres, now a national project, began with The STOP Community Food Centre in Toronto, offering meals to people in need, and providing access, training and incubation for community gardens and other food-related activities. The Toronto Food Strategy recently completed a study and launched a pilot called FoodReach to aggregate and distribute food at wholesale rates to the numerous community food agencies across the city. Toronto's School Nutrition Program provides healthy food to 160 000 schoolchildren across the city on a daily basis[1], and is part of a provincial network of school nutrition programmes. As well, in the context of climate change, migration challenges and diet-related health crises, food is increasingly recognised as a lever for positive change. For example, the City of Toronto was recognised for its work with new

[1] www1.toronto.ca/wps/portal/contentonly?vgnextoid=ecad946d1d592410VgnVCM10000071d60f89RCRD

Canadian communities through its programme 'Community Food Works for Newcomer Settlement: Using Food as Tool for Settlement and Interaction' that trains and provides certification in food handling, food literacy and employment skills to newcomers to the area. Toronto was recognised for this work at the 2017 Milan Urban Food Policy Pact meeting.

Figure 1: FoodShare promotes access to healthy and fresh foods

©FAO/ (FoodShare foodshare.net/custom/uploads/2015/11/MGFMbooklet-web-1.pdf)

From the rural perspective, the Golden Horseshoe Food and Farming Alliance (GHFFA) was launched in 2005. The Alliance is a stakeholder group that includes and consults with representatives from the City of Toronto and other municipalities, farming organisations, planners, business developers, real estate developers and government departments, among others. The Alliance brought together these diverse stakeholders to create an action plan for the area, addressing the combined pressures of urban growth and agricultural economies. The Plan, launched in 2012, has provided advocacy, support and input for sustainable development for all perspectives on food and farming within Greater Golden Horseshoe. The Toronto area is also a significant aggregation, distribution, storage and processing centre for food across the province. The Ontario Food Terminal (OFT) covers almost two million square feet on the edge of Toronto, and aggregates regional and imported food for buyers and distributors from Toronto and beyond. In 2013, it was estimated that an average of 5.5 million pounds of fruit, produce and horticultural products pass through the OFT every day. The Greater Golden Horseshoe encompasses much of Ontario's Greenbelt, a protected area of environmentally sensitive land (including key agricultural areas).

Beyond the City of Toronto, other municipalities in the Greater Golden Horseshoe are involved in significant sustainable food and farming activities. Hamilton has become a leader in urban agriculture projects and regulations. Waterloo has a countryside line and organisations to support regional food system production and markets, including FoodLink and the first Mennonite produce auction in Canada called the Elmira Produce Auction Co-op that aggregates and markets to local buyers (including institutional buyers). Guelph also houses important innovations, including an agricultural research centre, the Ontario Agricultural College at the University of Guelph and the headquarters for the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA).

Food policy work in Toronto and the region makes food a visible part of the urban and regional systems, where food is a critical part of its infrastructure that requires planning and coordination, as well as intentional interventions to improve sustainability, access and equity. Working at the city region scale is thus crucial for further assessment and planning of the food system (see Figure 2).

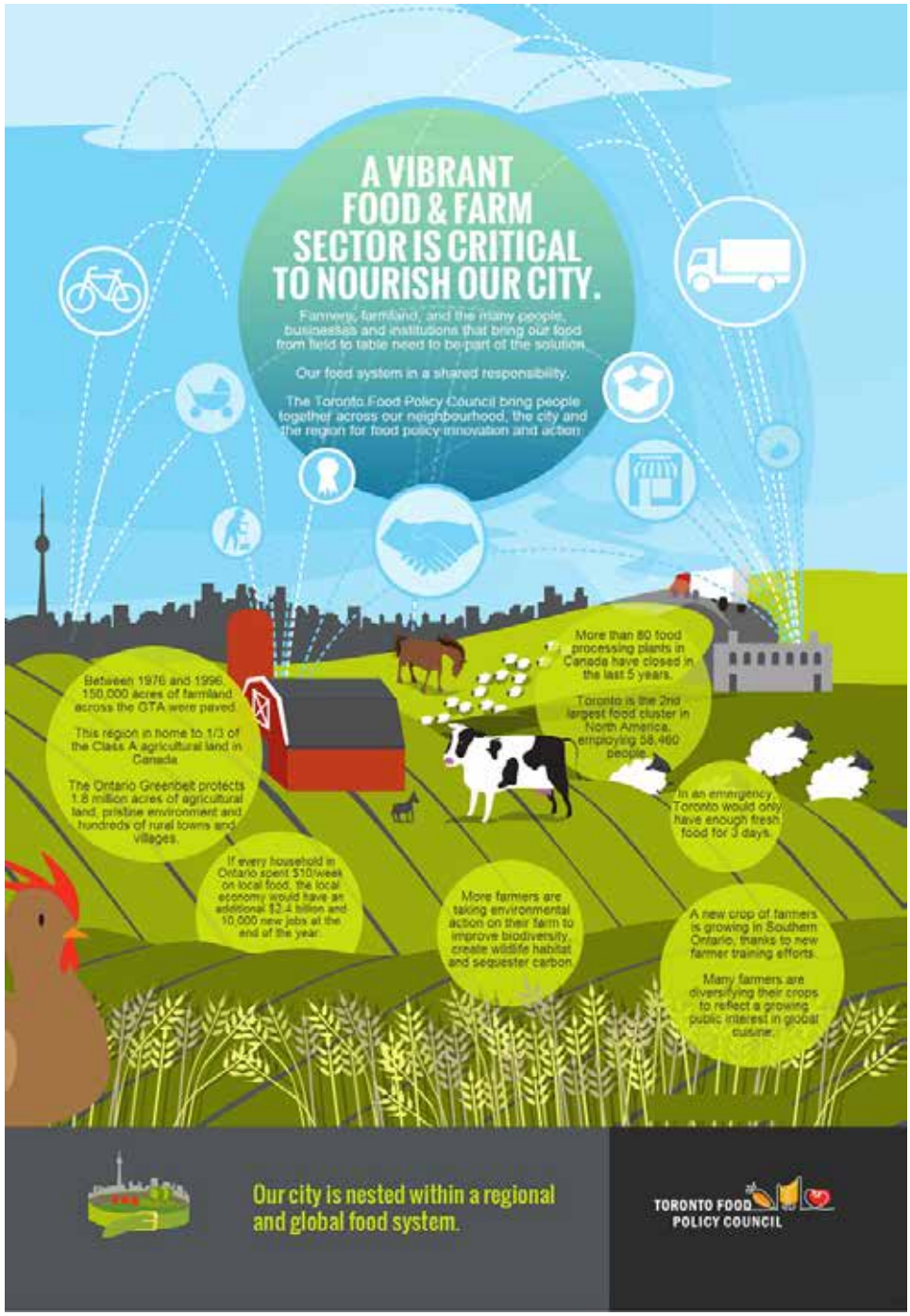


Figure 2: The city regional food system

©FAO/ tfpc.to/unfoldingstory

2 PROJECT METHODOLOGY

2.1 City Region Food System Task Force

As a City Region Food System (CRFS) assessment and planning process engages multiple disciplines and expertise, a local CRFS task force involving representatives from various government sectors and levels of government, research organisations and local universities and private sector was set up to guide the project. The Toronto–CRFS team included the institutional leads from the Toronto Food Policy Council and the Wilfrid Laurier Centre for Sustainable Food Systems. The research was led by a project coordinator (Dr. Sally Miller), who has worked and conducted research for stakeholders in sustainable food and agriculture since 1989. To launch the research, the leads conducted an environmental scan to determine the most robust list of Task Force members that would both represent multiple points in the food landscape and also provide deep knowledge about the Toronto CRFS. The CRFS Task Force convened quarterly from the summer of 2015 until the spring of 2017. The Task Force included Janet Horner, Executive Director of the GGHFFA; Harriet Friedmann, Professor in the Department of Sociology (Mississauga) and Fellow of the Centre for International Studies at the University of Toronto; Michael Wolfson of the Toronto Food Business Incubator (now Foodstarter); representatives from the Ministry of Agriculture, Food and Rural Affairs (Jaya James, Megan Flaherty); Rod MacRae, food and farm researcher and Professor of Environmental Studies at York University; and Barbara Emanuel and Brian Cook from the Toronto Food Strategy team (Toronto Public Health). Ralph Martin, Professor and Loblaw Chair in Sustainable Food Production from the University of Guelph and Fiona Yeudall, a dietician from Ryerson University, joined the Task Force halfway through the process as the Task Force identified gaps in expertise around sustainable production and nutrition. The Task Force was designed to provide guidance, planning and input to the city region food system research and analysis process. They represent all aspects of the food system from farm to plate to waste. In addition, each member of the Task Force is well-placed in a network of stakeholders to offer contacts, committees and round-table access for consultation and recommendations based on the outcomes of the research, and through their networks to support policy development and sustainable food system initiatives as they develop and are supported by the CRFS work.

2.2 Project phases

The project unfolded in three phases:

1. Defining the city region, visioning and CRFS literature and data scan

Based on the defined city region and vision, the CRFS scan helped to analyse existing and available information and establish a baseline for existing information and gaps. The Task Force started from a common vision on ultimate CRFS outcomes to generate a joint understanding of what type of information and data could be analysed and what type of stakeholders could be engaged in the process. Areas for analysis along value chain categories included: Agricultural inputs and production; Storage, processing and manufacturing; Wholesale and distribution; Marketing, catering and retail; Consumption; Organic waste management; Food and farm policy; Democratic engagement and Education.

2. CRFS in-depth assessment: interviews and food flow analysis

As part of Phase 2, food flow mapping and analysis was undertaken. Key fresh food types in the GGH were identified on the basis of a set of criteria including: Health implications (is increase recommended for optimal food intake; is the item included in the Nutritious Food Basket?); Opportunity for import substitution (Yes = enough produced to cover consumption; No = not enough to cover consumption; Doubt-Hard to expand production due to climate or other challenges); Commonness of food across different groups; Level of data available; and Match of food to GGH demographics including ethno-cultural considerations. Based on the number of positive attributes, specific foods were selected which were then characterised and quantified based on primary and secondary research.

Further, interviews were conducted with attention to shared themes and opportunities that had emerged in the CRFS scan and food flow mapping. During these interviews, stakeholders addressed specific sustainability challenges and required policy and system changes that would lead to stronger and more resilient regional food systems around Toronto. This in turn led to the identification of common policy gaps.

The recommendations included in this report aggregate stakeholder input to make a framework for a transition towards a more resilient system. Some leading questions that guided this analysis include:

- How do different lenses lead to different conclusions and different priorities?
- What are key topics of conflict and opportunities for agreement across the food system?
- What is each food system area not able to address easily?
- What is the level in the system of resilience and vulnerability: how would climate, political or economic shocks affect the food system area, sector or network?

3. Policy analysis

Building from the previous work, eight key policy recommendations were identified. These were further refined and used to develop scenarios that were tested through two focus groups. The scenarios can be used by stakeholders to further develop a detailed plan, address challenges and risks, and identify stakeholders and resources.

Separate reports on each of these phases can be downloaded here.

3 DEFINING THE CITY REGION

In Canada over 80 percent of the population lives in cities, most of these within a few hundred kilometres of the US border. The Greater Golden Horseshoe (GGH) is home to almost a quarter of Canada's total population. As Toronto Public Health points out in their 2010 *Cultivating Food Connections* report, "Food system thinking is a way of seeing the bigger picture, of developing solutions to food problems by seeing and leveraging their connections to other health, social, economic, and environmental issues" (TPH, 2010: 5) and so offers solutions to pressing problems linked to cities and their regions.

3.1 Scan of options and rationale for Toronto City Region definition

The Task Force identified three possibilities for the Toronto City Region. These included the Greenbelt area (which includes several protected land areas), the Golden Horseshoe and the Greater Golden Horseshoe. Although each approach has merits, the Golden Horseshoe or the expanded Greater Golden Horseshoe (see Table 1, Figure 3) hold more relevance for this study, with greater policy impact from a focus on the Greater Golden Horseshoe.

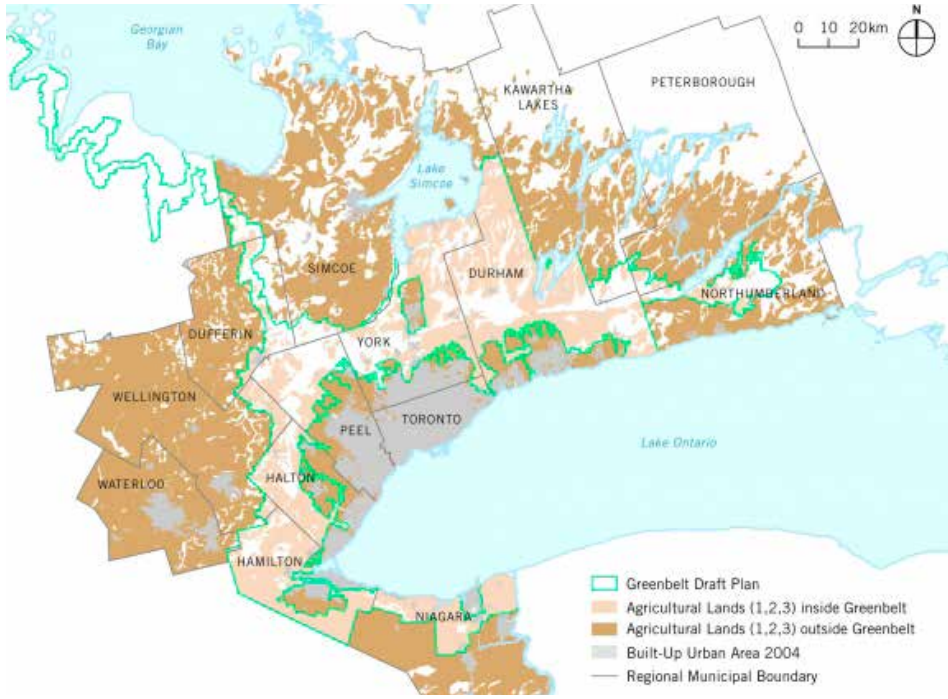
Table 1: Pros and cons for different definitions of the Toronto City Region

ITEM	GREENBELT (GB)	GOLDEN HORSESHOE	GREATER GOLDEN HORSESHOE
Policy availability	Yes; several	See GGH	Yes; Places to Grow
Policy applicability (for changing context)	Yes; currently proposed to expand into some of the other areas	See GGH	Focus of policy development and action currently
Relevance (agricultural)	Key policies that only apply to GB farms; less homogeneous data and policies for full agricultural area (whitebelt)	Covers a larger agricultural area, though not all in market distance of GH	Addresses key agricultural areas with relevance to urban markets
Relevance (environmental)	Includes key watershed, conservation areas (a designated environmental protection zone)	Has important impact on environmental goods in area, studies from Suzuki Foundation evaluate these	Has important impact on environmental goods in the area, studies from Suzuki Foundation evaluate these

ITEM	GREENBELT (GB)	GOLDEN HORSESHOE	GREATER GOLDEN HORSESHOE
Relevance (economic)	Specific economic issues related to frozen farm assets (limiting market for land sales); generally closest area to key urban market in GTA, and significant agricultural areas (Holland Marsh, etc.), specific supports from Greenbelt Fund to build agricultural business success, agri-tourism, supportive policies, etc.	Has a significant impact on Canada's economy based on percentage of population; much of the best soil in Canada, increasing its relevance as a foodshed over other lands; similar agricultural lands to Greenbelt, but more complete (includes whitebelt)	Has a significant impact on Canada's economy based on percentage of population; much of the best soil in Canada, increasing its relevance as a foodshed over other lands; similar agricultural lands to Greenbelt and Golden Horseshoe, but more complete
Relevance (social)	Less of a socially defined area; social issues on either side of Greenbelt border are fairly similar, all peri-urban	More relevant and complete as peri-urban and sprawl area is result of population growth with increased commuter distances for urban jobs; census data available corresponds to CMAs	More relevant as sprawling areas is result of population growth and creates increased commuter distances for urban jobs; census data available corresponds to CMAs
Level of existing data	Excellent collection of reports, analysis, etc.; upcoming expansion of area will render these inaccurate	Excellent reports from the Golden Horseshoe Food and Farming Alliance (GHFFA)	Excellent reports from the GHFFA with attention now on GGH so current research focuses on this wider area
Longitudinal data	Data available since the Greenbelt's inception; crosses municipal borders: Stats Canada and Ag. Census data are challenging to use in this region	Corresponds to municipal borders, matching Stats Can and Ag. Census regions, producing reports for several years	Corresponds to municipal borders, matching Stats Can and Ag. Census regions, new research underway; environmental goods report
Number of sources for data	David Suzuki Foundation, Greenbelt Fund reports, Dollars and Sense with other foundations	David Suzuki Foundation, Greenbelt Fund reports, Dollars and Sense with other foundations, Stats Can and Ag. Census data, detailed reports from Planscape and others	David Suzuki Foundation, Greenbelt Fund reports, Dollars and Sense with other foundations, Stats Can and Ag. Census data, few reports available as data collection now by GGHFFA
Applicability of census data (does it cut across census lines?)	Crosses municipal borders: Stats Canada and Ag. Census data are challenging to use	Corresponds to municipal borders, matching Stats Can and Ag. Census regions, has been producing reports for several years	Corresponds to municipal borders, matching Stats Can and Ag. Census regions

The Greenbelt area does not correspond to municipal, economic (food market) or agricultural boundaries, making data access challenging. Both the GH and GGH correspond to census regions. In addition, agricultural lands have been demonstrated to exist on both sides of the Greenbelt boundary, with similar access to urban markets and growing populations. An agricultural economy would encompass these areas as well, and would be based more on transportation and infrastructure options rather than environmentally sensitive areas. Finally, the Greenbelt area may expand soon, making existing reports based on the initial boundaries outdated.

Figure 3: Greater Golden Horseshoe



Source: Neptis Foundation 2014; www.neptis.org/publications/neptis-commentary-draft-greenbelt-plan/chapters/what-are-greenbelts-shortcomings

Excellent work is available from the Golden Horseshoe Food and Farming Alliance on the Golden Horseshoe. The material comes from a range of sources, including environmental impact reports from the David Suzuki Foundation (including Greenbelt focused and more recently GH focused reports). From the point of view of input to policy development, this area also seems to be receiving important attention with a coalition of urban and rural actors. In all cases, although Toronto and the GTA was left out of the last agricultural census, separate reports exist from various sources, in particular from Toronto Food Strategy and the Toronto Food Policy Council at Toronto Public Health, that can augment agricultural census data and provide a more complete picture of the GGH region.

It was concluded that the Greater Golden Horseshoe offered the best data, the most policy relevance and integration with ongoing important work by the GHFFA. However, some important work (for instance, environmentally focused reports from the Greenbelt Fund) does not correspond to the area but should nonetheless be addressed and included. Overall, a combination of areas with a principal focus on the Greater Golden Horseshoe best met the goals for the City Region Food System assessment for Toronto.

CITY REGION FOOD SYSTEM CONTEXT

4

Although little primary production occurs within the Greater Golden Horseshoe urban municipalities (though that is changing), the horseshoe that stretches from just east of the Toronto around the tip of the lake to the prime wine- and fruit-growing Niagara region represents a key agricultural area for Ontario and one of the most prolific and diverse food growing regions in Canada. The 32 000 square kilometres incorporates 41 percent of Ontario's farms, more than 50 percent of most food manufacturing, 21 upper and single tier municipalities, 89 lower tier municipalities, and around 65 percent of agri-food jobs according to a recent synthesis report (GHFFA, 2016: 8, 25, 28). It is estimated that approximately 40 000 jobs in agriculture are sustained in the Golden Horseshoe (a slightly smaller area than the GGH) (Walton, 2014: 2.37). A more recent study puts primary agricultural jobs at 35 584, indicating both dwindling numbers and perhaps a different statistical analysis (GHFFA, 2016). Over 200 different agricultural products are grown or raised in the GGH (Ibid.: 1.2, see also Figure 4).

Figure 4: GGH Microgreens Operation

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The population in the GGH is growing and is predicted to continue to grow at 1.4 percent compounded annually so that by 2031 the total Golden Horseshoe population is forecasted at almost 9.6 million (Walton, 2014: 3.2). The Greater Golden Horseshoe is expected to see population increases of more than four million in the next 30 years (Allen and Campsie, 2013: 1).

General trends in the GGH show a preponderance of small to medium scale farms but a tendency towards consolidation, as Gross Farm Receipts (GFRs) continue to rise but the number of farms and acreage is dropping (Walton, 2014). This can mean both higher food prices as well as higher productivity, and can mean the loss of jobs and related knowledge. Although food system jobs have been increasing, these are generally in the realm of food services, many of which are with transnational corporations that contribute less to economic multipliers than regionally owned and operated retail markets and food service providers. Despite the high agricultural productivity of the area, opportunities for regional processing have dropped significantly (Carter-Whitney and Miller, 2010); producers must send raw ingredients abroad for processing, weakening the overall food system as the higher manufacturing margins go to other regions or countries.

The GGH region is also home to important environmentally sensitive areas and includes most of the area protected under the Greenbelt plan. Estimates of the value of ecosystem services are high: "This report quantifies the value of the ecosystem services provided by the Greenbelt's natural capital, revealing the annual value of the region's measurable non-market eco-system services at an estimated CAD 2.6 billion annually; an average of CAD 3 487 per hectare" (Wilson, 2008: 1). The agricultural areas alone account for a significant portion of this value: "The Greenbelt's agricultural lands total value is also substantial at an estimated CAD 329 million per year including cropland, idle land, hedgerows, and orchards. Key values include the pollination value of idle land and hedgerows, the storage of carbon in soils, and the cultural value of agricultural lands" (Wilson, 2008: 2). Wilson (2013: 5) notes that "Between 1996 and 2001, 16 percent of the prime farmland in the region was lost to urbanization."

In addition to the environmental goods and services, the Advisory Panel on the Coordinated Review of the Growth Plan for the Greater Golden Horseshoe found that the diversity and mixed land uses of the GGH were valued by the resident population: "We heard that people value a diverse mix of land uses and housing types, a range of employment opportunities, high-quality public open space, a variety of transportation choices, and easy access to stores and services. We call these places 'complete communities'." (Advisory Panel, 2015: 11; see also Growth Plan for the Greater Golden Horseshoe, 2006: 7). "Complete communities" may require a different lens to measure impact, goals and conduct planning; they require robust and effective approaches to problem-solving, conflict resolution and long-term participatory planning involving all stakeholders. The Golden Horseshoe Food and Farming Alliance, the Toronto Food Policy Council and other stakeholders have begun this task, bringing diverse stakeholders together to participate in planning and policy-making.

In tackling food system issues, the diversity of jurisdictions and regulations, often contradictory and overlapping, can be frustrating (Caldwell and Proctor, 2013), while access to excellent growing conditions and lucrative markets in the GGH as well as the eastern United States for export-oriented producers continue to be a draw for food producers. A variety of planning acts seek to reconcile the different users in the area: "The 2006 Growth Plan for the Greater Golden Horseshoe was prepared under the Places to Grow Act and works in concert with the Greenbelt Plan to ensure that communities can accommodate new settlement while still protecting the natural areas and farmland that provide critical ecosystem services for residents, such as clean air, water, and local food" (Wilson, 2013: 8). The Growth Plan for the Greater Golden Horseshoe, 2017 was released on 18 May 18 2017 and came into effect on 1 July 2017, replacing the Growth Plan for the Greater Golden Horseshoe, 2006. The

new Growth Plan for the Greater Golden Horseshoe continues to explicitly call for curbing sprawl and protecting farmland and green spaces, while also promoting long-term economic growth and providing for housing, working and shopping demands, amongst other objectives: "The finite supply of quality agricultural lands that feed the region and beyond must be protected to ensure a vibrant rural and productive agricultural economy and a secure food supply for future generations" (Growth Plan for the Greater Golden Horseshoe, 2017: 3).

External legislation and arrangements like trade deals also affect the food systems in the area. The ability to make change is not distributed evenly among all actors, a fact that can lead to frustration as well as new initiatives to change the status quo. "Power circulates and value accrues at different stages along the chain, partly determined by enabling conditions such as subsidies, trade rules, transport infrastructure and business norms" (FAO, 2015: 17).

Demands for land use in the GGH come from agriculture, housing, food security challenges, recreation, industrial use, infrastructure for all uses and aggregate extraction. These can be compatible, as in the case of farmers who promote agri-tourism with hay-rides and corn mazes, or on-farm stores that combine marketing with production, or incompatible, as in the aggregate extraction sites where rehabilitation for agriculture has only been partially effective. A variety of pressures are driving food producers away. For example, Walton (2014: 2.21) observes that uses that are incompatible with near-urban development, such as livestock, tend to move to the periphery (see also GHFFA, 2016: 45). Likewise, food production that requires high capital investment tends to focus elsewhere, as tenure uncertainty, increase in rental properties and the encroaching urban edge can reduce the appeal of long-term investment for food producers. The diversity of potential users, including many who can realistically pay more than farmers, drives property values up to the point that new agricultural producers cannot get entry to the area (Walton, 2014: 2.32). The development sector has generally assumed that the lands below the Greenbelt will eventually be urbanised, and most of these lands have now been purchased or optioned by investors. This has led to significant impacts on the viability of agriculture, including an increase in the number of tenant farmers, lack of investment in agricultural infrastructure, fragmentation of the land base by development-related uses and near-urban pressure on agricultural operations.

Food production has been estimated to engage economic multipliers of 2–3 times the original impact of farmgate sales. This means that food production activities provide revenues to a municipality in the form of jobs, taxes and indirect impacts such as revenues from farm supply stores, large animal veterinarians and farm equipment suppliers. The revenues from agriculture tend to circulate, going to income for local residents, who may spend some of it at local stores, and support additional jobs and businesses through the circulation of this money. Other businesses, such as transnational corporations, tend to remove profits from local economies and aggregate it elsewhere, often in other countries, and to rely on specialised equipment and expertise that is not available locally.

This process of multiplying agricultural revenues locally and building local economies can be a long-term process, with new jobs and businesses gradually forming as the process unfolds. In comparison, housing development creates short-term profits for a non-local developer, and short-term construction jobs (often taken by people who are non-residents). Housing also costs the municipality through requirements for new public infrastructure such as water and sewage. The

long-term resilience of strong local economies, with money circulating from local farms to local markets and farm suppliers through local jobs and back to local food producers can be undermined by the appeal of immediate short-term profit from the sale of land to the highest bidder, generally housing development. The actual higher cost of housing development, particularly sprawl, in new infrastructure such as water and sewage to service the new developments is generally paid by the municipality through taxpayer funds in Ontario. Development charges to offset these costs have generally not been effective or applied to move the cost of sprawl to those who profit from the development (Baumeister, 2012).

It is in this context that the vision (see Figure 5) for a sustainable city region food system in Toronto was defined as:

> *Healthy food for all, sourced as regionally as possible, and as sustainably produced, processed, packaged, and distributed as possible.*

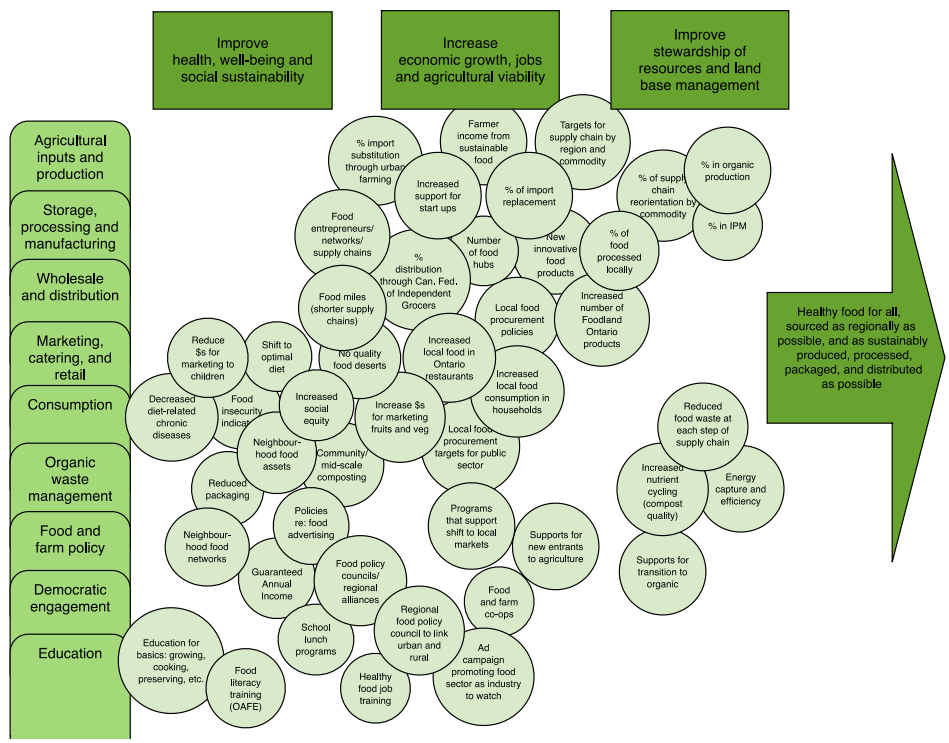

Figure 5: Vision chart, Phase 1 Task Force brainstorming with consolidation by S. Miller, 2015

DESCRIBING THE CITY REGION FOOD SYSTEM

5

5.1 Who feeds the city region?

The GGH is home to a complex food web. This section provides data about the different points in the food chain from field to fork.

Agriculture at a glance

- 19 266 farms
- 27 985 farmers
- 35 584 jobs
- CAD 12 billion revenue
- 200 acres average farm size
- 5.6 million tonnes GHG emissions/year
- 47 percent of farms depend on off-farm income

Growing Food in the Greater Golden Horseshoe

According to the Statistics Canada 2011 Census of Agriculture, there were 19 266 farms, and 27 985 farm operators in the Greater Golden Horseshoe (GGH)[1]. A more recent report separates the categories into finer detail indicating 14 477 farmers and farm managers, including farmworkers, bringing the total farm-related jobs to 22 421 jobs in 2015. Counting all the workers in primary agriculture brings their total up to 35 584[2]. The latter measurement does not include part-time and seasonal workers. The recent GHFFA report indicates that farmer and farm numbers are decreasing (GHFFA, 2016: 4). Statistics Canada data sets show that almost half the area farmers, 12 215 in all, supplement their earnings with off-farm income. Farm operators are aging in the study area with average operator age at 54.63 for the 16 counties (Statistics Canada, 2011).

As of the 2011 census, the GGH contained 3 817 475 acres of farmed land[3] which is a decline of more than 65 000 hectares or about 4.4 percent – an area larger than the city of Toronto[4] – since 2006. While farmland is being lost, farm size remains mid-scale on average. Although there are large farms in the GGH area, the average farm is still roughly 200 acres (Walton, 2014: 2.8). This number includes all farm types, from hobby farms with a couple of horses, to Christmas tree farms and to commodity farms. Statistics Canada tables show that 218 farms are certified organic and 54 describe themselves as transitional. In addition, thousands of these farms practise a range of techniques that increase sustainability with more than half the farms, more than 11 000 in total, practising crop rotation (see

1 Statistics Canada, 2011, www5.statcan.gc.ca 2011, Table 004-0237, Census of Agriculture, total number of farms and farm operators

2 GHFFA, 2016

3 Statistics Canada (www5.statcan.gc.ca 2011; Table 004-0201 Census of Agriculture, farms classified by total farm area)

4 Advisory Panel for the Growth Plan, 2015: 28; see also Walton, 2014 2.3

Table 2). However, it is important to note that often that rotation is between two crops – corn and soybeans – so is not ideal for soil health or biodiversity. The 2011 Census of Agriculture shows 65 percent of the farmer acreage is owned; 37 percent is rented; and 1 percent is public land[5]. Short-term leases are not conducive to good stewardship or long-term investment so the high number of farms producing on rented land is of concern.

Table 2: Farms with specific sustainable practices"

SUSTAINABLE PRODUCTION TECHNIQUES	NUMBER OF FARMS
Organic	260
Certified organic	218
Transitional	54
Winter cover crops	2702
Windbreaks or shelterbelts (natural or planted)	5255
Rotational grazing	4079
Ploughing down green crops	3865
Nutrient management planning	4125
In-field winter grazing or feeding	1995
Crop rotation	11321
Buffer zones around water bodies	4563

Source: Statistics Canada, Census of Agriculture, 2011. Table 004-0208. www5.statcan.gc.ca

The interest in and commitment to urban agriculture by municipalities is significant and growing. There are more than 100 food-growing gardens on city property according to the City of Toronto Action Plan for urban agriculture (*growTO*). Hamilton has developed plans to facilitate new urban farming in the city[6]. The total number of urban food-growing sites is difficult to calculate, as many sites that grow food in the city may be informal, single household, neighbourhood or even guerrilla garden projects that are not included in municipal data.

Farm economics

For the 16 counties in the GGH, the total value of output, associated expenditures, wages and taxes totals over CAD 23 billion annually. Direct output alone comes to almost 3 billion per year, with indirect and induced bringing the total output to almost CAD12 billion per year.[7] GGH farms are highly productive, with Gross Farm Receipts in the Golden Horseshoe almost twice the provincial average (Walton, 2014: 2.15). Research found multipliers from 1.16 (Cummings, 2014) to 4.3 (Walton, 2014) for the sector. Despite this high productivity, farm revenues have not changed in real dollars since the 1970s, while the cost of inputs, land and labour has steadily increased.

5 An error in the Statistics Canada summary tables removes York from this calculation. The actual total would be higher if York were included.

6 See www.foodandfarming.ca/hamilton-pushes-for-urban-farming/

7 Cummings 2014

Matching consumption and production

Overall, the province of Ontario has a food deficit of more than CAD 8 975 million dollars (Econometrics and Cummings et al, 2014: 14). We can get a better sense of the (mis)match between local production and demand within the GGH by extracting GGH data from a 2014 analysis that matches existing production with average demand for 22 foods produced locally (based on Desjardins et al. 2011 from research in Waterloo, one of the counties within the GGH). Tables summarising these estimates are presented for grains, fruits, vegetables, meat and eggs (see Tables 3, 4, 5 and 6). For grains, counties in the GGH produce enough oats and barley to meet local demand. While there is also a surplus of 116.3 thousand tonnes for soy beans in the GGH data is not available for Toronto, so this data needs to be interpreted with caution.

GRAIN	WHEAT	OATS	BARLEY	SOYBEANS
Average kg consumption/ capita/year	60.28	2.12	0.07	5.5
GGH surplus/deficit ('000s tonnes)	-112.9	7.9	81.8	116.3
Ontario surplus/deficit ('000s tonnes)	727.5	44.9	207.4	453.8

Table 3: Grain production–consumption for the GGH (adapted from Econometrics 2014; Cummings et al. 2004)

There is a deficit in apples and strawberries of more than 280 million and 79 million pounds respectively (see Table 4). Given that there are also deficits for the province these gaps are currently filled from outside the province. Grape and peach production exceeds demand from within the GGH and so this surplus could help meet demand from other regions in the province. There are vegetable surpluses for cabbage, sweet corn and peppers with deficits of green and wax beans, potatoes, carrots, tomatoes and onions. Based on current production, all of the vegetable deficits could be addressed through production within the province, except for green and wax beans and potatoes.

FRUIT ('000S LB)	APPLES	GRAPES	PEACHES	STRAWBERRIES
Ave kg/capita/year	51.7	10.36	4.74	9.99
GGH surplus/deficit	-283 178.5	27 983.4	4 168.1	-79 402.7
Ontario surplus/deficit	-265 784.3	-2 468.2	-11 972.6	-113 868.7

Table 4: Fruit production-consumption for the GGH (adapted from Econometrics 2014; Cummings et al. 2004)

VEGETABLES ('000S LB)	CABBAGE	G/Y BEAN	POTATOES	CARROTS
Average lb/capita/year	11.77	4.23	125.82	24.27
GGH surplus/deficit	-60 077.4	-29 268	-717 230	-2 412.8
Ontario surplus/deficit	-55 763.3	-7 571.8	-980 166.1	35 530.1

Table 5: Vegetable production-consumption for the GGH (adapted from Econometrics 2014; Cummings et al. 2004).

VEGETABLES ('000S LB)	SWEET CORN	TOMATOES	PEPPERS	ONIONS
Average lb/capita/year	16.84	69	9.02	18.55
GGH surplus/deficit	-64 774.9	-386 645.4	-45 641.3	-53 102
Ontario surplus/deficit	79 886.5	656 871.8	66 961	-30 241.9

Table 6: Meat and egg production–consumption for the GGH (adapted from Econometrics 2014; Cummings et al. 2004)

	BEEF	SHEEP/ LAMB	PIGS	CHICKEN	TURKEY	EGGS
	lb	lb	lb	'000 tonnes	'000 tonnes	dozens
	63.4	2.44	49.24	32.82	4.7	16.1
GGH surplus/ deficit	-403 770 912	-11 431 093	-216 969 862	-23.6	4.7	2 415 304
Ontario surplus/ deficit	-324 711 379	-7 170 943	250 141 134	-74.5	9.9	35 085 682

Land values

The value of land in the area varies between CAD 8 000 and CAD 18 000 per acre according to several real estate studies (ReMax and Valco). However, many transactions are based on handshake agreements and may not be registered by these formal studies. Anecdotal reports of sales as high as CAD 24 000/acre are common, as farmland is converted from agricultural production to housing development. Rates above CAD 10 000/acre make entry for new farmers difficult if not impossible. As farm operators reach retirement (as over half of them will in the next ten years), they may seek to sell at the highest rate to pay off the debt that years of poor returns have brought them. As a National Farmers Union (NFU) report shows, farm debt increased from CAD 64 billion to CAD 87 billion in 2013 in Canada (Holtslander, 2015: 24).

Employment

Employment figures are particularly challenging to reconcile as the calculation of agri-food jobs varies from one report to another. For Toronto alone, Zizys (2015) calculated 144 170 food production related jobs. The recent GHFFA report calculates 354 182 total jobs in the agri-food sector, but 630 325 when including the entire value chain (farming, processing, distribution, access). Of note is that employment numbers show that Golden Horseshoe farms support more households overall than farms elsewhere in the province. The report (JRG Consulting, 2014: 20) concludes that "Farming in the region is more labour-intensive; this reflects its much greater proportion of Ontario's horticulture output." Farming organically has also been found to be more labour intensive, creating more jobs. "The 2011 Canadian Census of Agriculture found that although organic farmers represented 1.8 percent of farms, they accounted for 3.75 percent of farm workers, suggesting again higher labour requirements per farm" (MacRae, N.D.: 13).

Estimating future impacts is also challenging. The Advisory Panel on the review of the Growth Plan notes (2015: 59) that "There is a general lack of municipal confidence in the employment forecasts in the Growth Plan." The uncertainty affects job growth as well as calculations of the size of future regional food markets.

Wage levels for most agri-food occupations are low, ranging in one study for Toronto from CAD 31 439 to CAD 53 248 per year. The controversial adoption of a CAD 14.00/hour minimum wage for Ontario as of 1 January 2018 with an increase to CAD 15.00/hour in 2019 will certainly have an impact on employment in agri-food. Further study will be needed to determine whether this will be net positive or negative, or possibly both depending on the industry.

Agriculture and the environment

For the Greater Golden Horseshoe, water use is approximately even when intake and discharge are compared at around 3 500 million cubic metres annually. Greenhouse gas emissions total 5 594 070 in CO_2 tonnes. Energy consumption accounts for around 104 311.1 terajoules of Ontario energy use. Solid, wood and food waste total 207 327 tonnes.[8]

Environmentally sustainable farming can have positive impacts on the bottom line of operators as well as the province. Farmers who protect the soil from erosion, manage the water systems to conserve and distribute and engage in other stewardship activities may be saving themselves money in the long run. However, long-term financial benefits do not always impress when financial horizons are short, as in tenuous lease situations. One study found that optimizing pesticides and chemical fertilisers could save CAD 18.3 million in fertiliser applications and CAD 9.1 million if only 10 percent of Ontario production was moved to organic production (MacRae, 2009: 129). Vidoni (2011: 8) reports on a study that shows that "the production of one unit of phosphate fertiliser requires as many as three units of carbon to produce and apply (Brown and Leonard, 2004)." MacRae et al. report (Weber and Matthews in MacRae et al., 2013: 938) that food comprises 12 000 tonnes/ kilometre travelled of emissions when inputs to agricultural production are included.

Several studies of the environmental benefits of key land uses in the area, particularly the Greenbelt, have been undertaken by the David Suzuki Foundation. Tomalty's 2012 study found that the carbon storage in agricultural lands in the Greenbelt was valued at CAD 330 per hectare, based on an estimate of 80 tonnes per hectare. Sequestration brings an additional CAD 26 per agricultural hectare, with another 0.5 tonnes per hectare of carbon (see Table 7). Wilson (2008: 2) found that in the Greenbelt ecosystem services alone the "agricultural lands total value is also substantial at an estimated CAD 329 million per year including cropland, idle land, hedgerows and orchards. Key values include the pollination value of idle land and hedgerows, the storage of carbon in soils and the cultural value of agricultural lands."

Table 7: Carbon storage and sequestration in the Greenbelt

(UNITS)	PRICE	AMOUNT (TONNES)
Storage	CAD 509 810 303.31	123 590 376.56
Sequestration	CAD 40 166 872.38	772 439.85

Source: Tomalty, 2012

5.2 Food processing and manufacturing

General terms

Food processing encompasses three stages and levels of preparation. Primary processing involves basic preparation for market, such as washing carrots or trimming leeks. Secondary processing is more generally what is considered "value-added," that is, manipulating the harvested product in some way to make it more valuable for sale. This can mean dicing and bagging or basic canning. Tertiary

8 Cummings report (2005)

processing is more complex, with fully evolved recipes and multiple ingredients: prepared meals or pasta sauces. Although the higher level of processing often comes with unhealthy ingredients that increase shelf stability or shelf life, along with added high fructose corn syrup to sweeten, or added salt, these ingredients are not essential. Organic and natural processors have found substitute ingredients and processes that achieve many of the same effects. Primary processing is often done on the farm, though large-scale operations or groups of farmers may arrange for off-site facilities. Statistics Canada and other databases generally include all three types, and do not distinguish them from each other, nor are there finer distinctions for different processes or ingredient choices.

Processing at a glance

- CAD 36.9 billion revenue (Ontario)
- 50 percent of food processing jobs in ON
- 200,000+ jobs
- CAD 15 billion revenue Toronto only
- 14.8 m+ tonnes CO_2 emissions
- 38 food + safety regulations
- 200 network associations

Figure 6: GGH Processing Operation

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Number of operations

Food processing and manufacturing is concentrated in the study area; JRG Consulting (2014: 2) notes that the Greenbelt alone can be credited with 60 percent of Ontario's food processing and manufacturing jobs, while the GHFFA 2016 report finds more than 50 percent of these jobs situated in the GGH (the discrepancy is probably mostly due to counting differences, although the processing sector has also lost jobs over the last decade). Overall, Ontario has almost 40 percent of Canada's food manufacturing (Walton, 2014) with about 3 200 facilities in the province (Industry Canada, 2016[9]; Synthesis, 2010: 2). In 2003, MacRae et al. (2009: 127) estimated that about two percent of these firms were organic processors and handlers.

9 Industry Canada at: www.ic.gc.ca/app/scr/sbms/sbb/cis/establishments.html?code=311&lang=eng

Employment

Food processing accounts for over 200 000 jobs in the GGH, or 13 percent of all food related jobs (GHFFA, 2016: 14). The City of Toronto (Canadian Business Patterns Census Tract Aggregation Tool, December 2013[10]) houses over 21 615 food manufacturing jobs and almost 17 percent of food-related jobs (Zizys 2015: 6). Except for labourers, pay levels in food manufacturing are high relative to other food sectors (Zizys, 2015: 9). One study reported that, based on company surveys, 7 000 to 10 000 new hourly employees would be needed over the following ten years in Toronto (WCM Consulting, 2002: 22). Growth estimates were for 5–10 percent with a focus for growth on small and medium businesses (Ibid.: 31). In response to this anticipated demand, new training for food processing was launched at Loyola College, Conestoga College and other places to respond to this identified need. There is also an award-winning Food Handling Certificate programme offered through Toronto Public Health.

Economics

OMAFRA reports (2012; see also Cummings 2014: 11) that the value of the sector for Ontario is about CAD 40 billion. For Toronto alone, WCM Consulting (2002: 4, 17) estimates the value of food processing at around CAD 15 billion, with approximately 400 operations. WCM also reports a relatively affordable start-up cost at the low end of the spectrum, citing only CAD 50 000 for initial investment in some cases, and up to CAD 6–8 million for larger facilities (2002: 24).

Infrastructure

Ontario has steadily lost processing and other supply chain infrastructure over the last few decades. The Advisory Panel for the Growth Plan found that "The agricultural sector is experiencing a loss of supportive infrastructure and farm services (e.g. processing facilities) as the number of farm operations in the GGH declines" (2015: 95). Recognizing the importance of sectoral supports for successful farming sectors, OMAFRA is exploring "regional agri-food strategies, a potential approach for combining protection of the land base with economic incentives and infrastructure development to create conditions for sustainable agriculture" (Ibid).

The recent GHFFA 2016 report created an online asset map database for the agri-food sector in the GGH which shows a significant gap in fruit and vegetable preserving and meat product manufacturing (2016: 35). For instance, the Cummings report (2005: 117) found key barriers to development of regional strawberry production in the processing infrastructure: "The key barriers to expanding local production would appear to be the lack of good post-harvest handling, the challenges of local supply being integrated into long-distance supply chains, and insufficient freezing operations to create a viable frozen berry market." The GHFFA study (2016: 7) identifies a major restructuring in the North American food industry that has created opportunity for all categories of processing: "As the North American industry goes through a major restructuring, there is a need to retain existing large processing operations (business retention and expansion) as well as some opportunities for new investment attraction in various sectors. In addition, economic development efforts to support smaller, niche operations (small to medium enterprises and on-farm processing) will greatly benefit

10 See census tract maps at: www1.toronto.ca/wps/portal/contentonly?vgnextoid=e8aae5318bfd3410VgnVCM10000071d60f89RCRD&vgnextchannel=e71032d0b6d1e310VgnVCM10000071d60f89RCRD&vgnextfmt=default

the GGH region." Given the tenuous state of the North American Free Trade Agreement there may be increased interest and the rationale for more GGH- based food processing plants.

As the beef prices collapsed following the BSE crisis and new regulations resulted in the closure of many small abattoirs, the industry has developed locally identified brands with regional and provincial distribution while continuing to export from federally inspected plants. New opportunities for large, export-oriented manufacturing are also in evidence. The GHFFA reports the launch of new processing plants in the GGH, a new agri-food shipping terminal in Hamilton, and a new Tetra Pak facility in Toronto (2015: foodandfarming.ca).

Environment

Cummings found that the food processing sector in southern Ontario uses 249 271 terajoules of energy and produces almost 15 million tonnes of carbon annually (2005: 18). Compared to agriculture, water intake (total use around 9.3 billion cubic metres, net 115 million cubic metres) and air emissions are higher. Uzea et. al. (2013: 6) found that food processing accounted for around 18 percent of waste across the supply chain. Specific measures for the Greater Golden Horseshoe were not available in the secondary research. The statistics might be higher per square foot in the GGH due to the concentration of food processing in the area. See Text Box 2 to understand more about how food processing efficiencies can diminish greenhouse gas emissions.

5.3 Food wholesale and distribution

Distribution: Operators, volume and employment

The distribution sector has been under-emphasized in research on Ontario food systems. While around 42 000 wholesalers are reported for all of Ontario (GHFFA, 2016) the operators have a low profile as they are not open to the public nor are there network associations of distributors. The total value for the sector in the Golden Horseshoe (excluding several counties in the GGH) is estimated at over CAD 1.5 billion (Walton, 2012: 1.1) while Statistics Canada sets the value for Ontario at almost CAD 56 billion. This substantial difference suggests that these numbers are difficult to assess with any accuracy. Although distribution would be more costly outside southern Ontario, given the concentration of agriculture and retail activity, Walton's estimate of less than three percent of provincial costs of food distribution seems low.

Food merchant wholesalers in the GGH employ 35 794 people (GHFFA, 2016: 23). As part-time and seasonal workers have been left out as in the agricultural assessment, this number would be higher. In fresh fruits and vegetables, the employment tends to increase during the local production season. Farm product and beverage wholesalers add another 5 000 jobs to the total. Box 2 provides insights into a successful sustainable local food distribution company, 100 Km Foods located in the GGH.

Distribution at a glance

- CAD 1.5 billion revenue (Golden Horseshoe)
- 35 794 jobs
- 831 903 tonnes CO_2 emissions (southern Ontario)
- 15+ trade deals

Box 2:
100 km Foods

©FAO/ Henk Renting

Paul Sawtell and Grace Mandano left their pharmaceutical careers in 2007 and founded 100 Km Foods where they purchase from local producers with a focus on the region, and distribute to customers, mostly chefs, in the Toronto area. The majority of their 80 suppliers are within 100 kilometres of the warehouse as "you could drive yourself out of business if you went too far" (Sawtell, 2015). They organise the supply into four clusters with different pickup runs for each. The product focus is fresh, but they offer some basic value-added products as well. Their mandate is for local, sustainable product.

They built their distribution business with the goal of making urban to rural linkages. The work began with a series of cold calls to chefs and producers; the latter were more skeptical, while the chefs were enthusiastic. They got their first truck in 2008. Like many local food businesses, they were "incubated" at FoodShare, sharing space and getting support from the vibrant and creative atmosphere at the FoodShare warehouse. Later, they got their own space, grew out of it, and in 2014 moved to their current location in north Toronto. They share the new space with Fresh City Farms, another entrepreneurial business that trains people in intensive food growing for urban agriculture plots and supplies food through online ordering and home delivery. Sharing space has meant reduced costs and efficiencies for each. They received a grant that paid for 50 percent of their shared cooler and 100 km Foods has ten trucks and 20 staff. They store very little product in the warehouse beyond a day or two and strive to tighten the schedule as they are competing with same day pick-up options from the Ontario Food Terminal (though the advantage for 100 km Foods is that they harvest to order rather than on speculation).

100 km Foods currently supplies about 250 active customers, including retailers, hotels, universities, colleges and restaurants. They hold events for the chefs to meet the farmers. They have found that even when a chef moves on, the restaurant will retain them as a supplier, indicating well-developed relations of trust that go beyond just the buyer. They offer product with the producer name, and marketing is tied to the individual farmers.

Environment

A 2014 report estimated emissions by food commodity transported (weight and volume will affect the emissions per commodity type) based on an ideal efficient distribution system in which products were delivered to the closest demand first (Cummings et al., 2005: 29). The actual emissions for distribution are probably considerably higher than this study estimates. For the top foods for the CRFS research, in southern Ontario for 2011, carbon emissions were almost 12 000 tonnes for apples, almost 2 000 tonnes for carrots and beef, and more than 5 000 tonnes for eggs. Overall, the movement of fruits and vegetables was calculated at almost 50 000 tonnes annually based on the 2011 numbers, with 831 903 tonnes CO_2 emission for the food system overall in southern Ontario (Cummings, 2005: 29). The sector accounts for about three percent of waste in the food system (Uzea, 2013: 6). The loss may have been higher in the past; MacRae (in review: 12) reports that "An interview with a senior executive at a major Canadian retailer revealed that in the late 2000s the company was rejecting 75 truckloads of produce a week at the distribution centres across Canada that amounted to about 2722.5 tonnes a week or 141 570 tonnes a year. This did not include what the retail stores rejected from the DCs [Distribution Centres]." Box 3 elaborates food processing-based efficiencies to help diminish climate changing gases.

Box 3: Food Processing GHG Efficiencies

Contrary to popular notions of the importance of food miles and reducing long-distance transportation, there may be other points on the supply chain that are more polluting and/or more conducive to change (See for instance Weber and Mathews, 2008). Pimentel's work in the US that shows packaging alone is responsible for seven percent of food system energy use (cited in MacRae et al., 2013: 948). The study found that cooling and storage was a significant source of energy use that was under-emphasized in popular reports, accounting for as much as 16 percent of energy used (Ibid.: 949). Similar findings are reported in the UK where, "…refrigeration accounts for at least half of the energy used by food retail outlets, and CO_2 emissions from cold storage at retail and food service account for nearly one percent of all emissions from these subsectors (Garnett, 2006)." MacRae's study notes that the Canadian fruit and vegetable processing sector has been found to be worse than others in both emissions and energy consumption (Ibid.: 957).

Another study shows that the full energy costs of imported product outweighs the costs of local storage and production, "In their study contrasting California lettuce exported to New York with locally produced cabbage, Pimentel et al. (2008) argue that the production, irrigation, and transport energy costs of the lettuce so exceed the production and storage costs of local produce that such localization scenarios should generally be positive in energy terms." (in MacRae et al., 2013: 948). The findings recommend regional production combined with just-in-time inventory so long-term refrigerated storage of fruits and vegetables is reduced. However, the methodology for measurement of local and global food systems impact on the environment is still under development, as are the systems themselves. The development of regional food hubs, mid-scale processing and urban agriculture projects may lead to significant change in the landscape of the environmental impact of regional food.

Other less energy intensive storage options include the traditional root cellars, where harvest is stored at a household level, and new Mennonite ice houses which use snowpack in Ontario's north to maintain even cooling all summer. The cost of construction in the north is about CAD 15,000 for the insulation, materials and requires about 50 person-hours to construct (Miller, unpublished report, 2015, for the LOFC Network). These latter solutions could result in systemic change to more seasonal diets and less bulk buying. MacRae finds that box programmes providing local food achieve some of the best results as storage is minimal and the need for individual car-dependent shopping trips and widespread retail cooling and storage would be reduced (Ibid.: 954). Pimentel argues for a reduction in consumption of secondary and tertiary processed products "that require large energy inputs" (MacRae, 2013: 951).

5.4 Food marketing, catering and retail

Retail, food service, restaurants, institutions

The food service sector is the largest and fastest growing of the food system sectors valued at almost CAD 41 billion in Ontario (Statistics Canada, 2015). In Toronto, the figures show that grocery stores command a high percentage of the sales, with convenience and specialty stores at around less than 5 percent of grocery and food store sales (see Table 8).

Retail at a glance

- CAD 40+ billion revenues in Ontario
- 130 792 jobs in food retail
- 345 924 jobs in food service
- 4 "less healthy" retail stores for every "healthier" food retail in Toronto
- 25 percent of transport emissions

Table 8: Ontario food retail sales (dollars)

TYPE OF STORES	FOOD RETAIL SALES (CAD)
Food and beverage stores [445]	16 836 184 000
Grocery stores [4 451]	12 709 054 000
Supermarkets and other grocery (except convenience) stores [44 511]	11 924 109 000
Convenience stores [44 512]	784 946 000
Specialty food stores [4 452]	1 065 347 000
Beer, wine and liquor stores [4 453]	3 061 781 000

Source: Statistics Canada, Table 080-0020 Retail trade (2015)

Figure 7: Natural food market

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A recent study of Toronto community agencies (providing food at no charge for people living with food insecurity) shows expenditures of about CAD 29 million annually (Miller, 2013: 5). An additional CAD 17 million is spent every year for the Student Nutrition Programs at schools, ensuring fresh healthy food for students to improve health and educational outcomes. Growing networks of farmers' markets, including at least 38 markets in Toronto, provide food direct from the farm (or sometimes aggregated or even purchased from the food terminal). The Organic Council of Ontario reported that (GHFFA, 2016: 42) organic direct-to-consumer markets (including CSAs) have been estimated at CAD 192 million annually, while the organic retail market in Ontario is estimated at CAD 1.13 billion. Altogether the amount spent on food in Toronto is estimated around CAD 7 billion (Toronto Public Health Cultivating Connections report, 2010: 7).

Although the aggregated numbers are large, Canadians spend a relatively low percentage of household income on food, only 10 percent in the 1990s (Toronto Public Health, 2010: 11). For 2013

in Ontario, OMAFRA reported that only 9.5 percent of household income was spent on food[11]. Since farmer income per unit has not risen in real dollars since the 1970s, the increased profit must be accumulating elsewhere along the supply chain. While retail is profit-driven, the grocery sector operates on very thin margins and has plateaued recently, garnering growth from acquisitions rather than increasing sales. Consolidation among the top three controlled 87 percent of the industry a few short years ago (Toronto Public Health, 2010: 10) but encroachments from Walmart and Costco have whittled away that control. The competition for retail dollars has become increasingly cut-throat. MacRae argues that the main growth opportunity is probably the organic market at 15–25 percent growth/year rather than conventional goods (MacRae et al., 2009: 120).

Employment and economic impact

Sixty-eight percent of agri-food jobs are in the food service sector, with retail only accounting for three percent and the majority in food service (hotels, restaurants, institutions) (GHFFA, 2016: 14). The number of jobs in the GGH for food retail total 130 972 and 345 924 for food service (hotels, restaurants, institutions) (GHFFA, 2016). Wages in this sub-sector are low, ranging from CAD 21,000 to CAD 35,000. As noted in the GHFFA report (2016: 4), the contribution of these jobs to the local economy is probably lower than other sectors, as corporate food outlets are owned by foreign or transnational companies in many cases. Even for large domestic corporations, the revenues most likely do not remain in the community. Likewise, large retail grocery annually widens their private label offerings, many of which are manufactured elsewhere and imported into Canada (GHFFA, 2016: 56).

Health

The links between food and health are essential parts of assessing the retail food landscape. The City of Toronto has engaged in asset mapping for healthy food retail, identifying areas of the city where low- income neighbourhoods correspond to low availability of healthy food. The research found that “there are four less healthy food stores for every healthier food retail outlet” in low-income neighbourhoods (Toronto Public Health, 2015: 5). Altogether, mapping by the Toronto Food Strategy team has identified a total of 1 653 healthier food retail outlets in Toronto (Food by Ward, 2016).

As in some US cities, Toronto has begun to pilot healthy corner stores’ programmes, offering some fresh and healthy choices at convenience stores that are often the nearest source of food in low-income neighbourhoods. They also tested a healthy choice option through the small convenience stores in the various subway stations, providing good food on the go for commuters.

11 www.omafra.gov.on.ca/english/stats/economy/index.html

Environment

Frequent shopping trips by one person in their car are one of the primary sources of food system-related emissions. MacRae et al. report that "About 25 percent of transport emissions in the food supply chain are associated with final delivery [that is, consumer shopping trips]" (2013: 938). In terms of the impact of food waste, although reports on emissions for the specific sub-sector have not been identified, the sector accounts for 11 percent of waste through retail, and eight percent of waste through food service (Uzea, 2013: 6). Cooling and storage account for a significant portion of food system energy use and emissions. Shrink at retail varies by category, with the highest percentages in the perishable produce and bakery sections (MacRae, in review: 13).

5.5 Consumption – Availability

Consumption at a glance

- 10–17.6 percent households are food insecure
- 350+ agencies provide 6.5 million+ meals (Toronto)
- 116 community kitchens (Toronto)
- 3 459 410 people self-report as obese

Food is not available equitably or evenly across Canada. While excellent food from a wide diversity of sources and cuisines is available for those who can pay, others who live on limited incomes or in under-served areas face food access and food insecurity challenges. In Ontario 11.9 percent of people face varying levels of food insecurity, while the number rises to 12.6 percent in the Greater Toronto Area (GTA) (Tarasuk, 2014: 28 Appendix F). Hunger varies between 10 and 17.6 percent in the Greater Golden Horseshoe (Tarasuk, 2014: 28 Appendix F). Food Banks Canada (2015: 3) reports that 358 963 individuals accessed food banks in Ontario in March 2015. A recent study (Miller, 2013) found that at least 350 Toronto agencies were providing meals and food, generally at no charge, to people in need, totalling millions of meals annually through the non-profit and charitable sectors (2013: 11). The recent Food by Ward asset maps show 116 community kitchens in the city, and 160 257 students served daily by the Student Nutrition Programs[12]. Food insecurity disproportionately affects children (roughly 1 in 6) and single-parent households with female heads of household (Tarasuk, 2011: 8, 10).

Of the top foods identified for the CRFS food flow project (reported in the next section), average amounts available for Canadians by kilogram/person/year (Statistics Canada, 2015) are reported in Table 9. Current intake is different, however, and further differs from optimal intake for a healthy diet (see Table 10).

12 See tfpc.to/food-by-ward.

Table 9: Amount of key foods available in Canada

ITEM	AMOUNT AVAILABLE, ADJUSTED FOR LOSSES (KG/PERSON/YEAR)
Apples	6.88
Carrots	3.92
Beef (boneless weight)	11.2
Chicken (boneless weight)	10.39
Dairy: whole milk	7.15 litre/person/year
Eggs	10.55

Source: Statistics Canada, Table 002-0011, Food available in Canada

Table 10: Current and optimal intake of key foods

ITEM	CURRENT INTAKE	OPTIMAL AMOUNT
Apples	8.0	20.8 kg/person/year
Carrots	6.5	22.8 kg/ person/year
Beef, chicken, eggs	Sufficient	1.5 servings (half cup each1)/day)[13]
Dairy	Sufficient	3 servings (1 cup each)

Source: Desjardins, 2010: 131, 135

In an analysis of availability and optimal consumption in southern Ontario, Cummings (2014: 112 ff) reports that oats, cabbage, green and wax beans, carrot, strawberries, white beans, apples, sweet corn, potato and carrot production could all be increased in Ontario if an optimal diet was consumed (based on Desjardins et al, 2010). At current consumption rates, additional production in cabbage, beans, strawberries, apples and potatoes would be needed for all Ontario consumption to be met through Ontario production. If the assessment focuses only on southern Ontario, then cabbages, beans and apples are also sufficient for current southern Ontario consumption levels, leaving only strawberries and potatoes in short supply to cover regional demands. If Ontario diets shifted to an optimal diet (based on Desjardins et al, 2010), only tomatoes are produced in sufficient quantities to provide for optimal consumption in Ontario. Of course, not all products are produced in sufficient quantity within the Greater Golden Horseshoe to serve that area's population. For instance, greenhouse production for tomatoes tends to cluster in an area about 300 kilometres away and has not been widely introduced in the GGH. In fact, the Cummings (20054: 116) report shows that the GGH area would be short more than 150 000 tonnes of tomatoes if forced to rely on regional production for an optimal diet.

13 http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/basics-base/serving-portion-eng.php

Economics

As noted above, less than 10 percent of household income is spent on food in Ontario despite its impact on short- and long-term health, education outcomes and other markers of well-being. Table 11 summarises the amount by household spent on the top foods identified in the CRFS project.

Table 11: Annual household expenditures on key foods in Ontario

2014	HOUSEHOLD EXPENDITURES	PRICE (OCT 2014)	NOTES
Apples	66	3.90/kg	
Carrots	25	1.66/kg	
Beef	276	11.74/kg	Ground beef
Chicken	259	7.49/kg	
Dairy	776	2.49/1 litre whole	
Eggs	84	3.22/dozen	

Source: Statistics Canada 2015, Table 203-0038, Survey of household spending (SHS), detailed food expenditures, Canada, regions and provinces.

The Consumer Price Index (Statistics Canada 2015, Table 326-0021 Consumer Price Index, annual (2002=100) shows an increase of over one percent in the cost of food in Ontario from 2011 to 2015 (based on a set of basic food items tracked over time). However, household expenditure on food in Canada dropped slightly (less than one percent) between 2010 and 2014, despite rising food prices (Statistics Canada, Table 203-0023 Survey of household spending (SHS), household spending, by household type, annual (dollars)).

Health

Toronto Public Health has found that “Alongside hunger, approximately one in three Toronto children (age 2–11) is either overweight or obese. According to a 2010 report from Statistics Canada, children as a group are “taller, heavier, fatter and weaker than in 1981” which may lead to accelerated “non-communicable disease development, increased health care costs, and loss of future productivity” (2010: 3). Additionally, in the GGH the recent Community Health Survey shows a slight drop in fruit and vegetable consumption, with fewer people reporting that they consume at least five servings of fruits and vegetables daily (Figures 8 and 9 Note: the figures are derived from public health unit reports from 2010–2014 for the counties that generally correspond to the study area. As the geographical boundaries may be different in some cases, these numbers give a general idea of trends in the Greater Golden Horseshoe.)

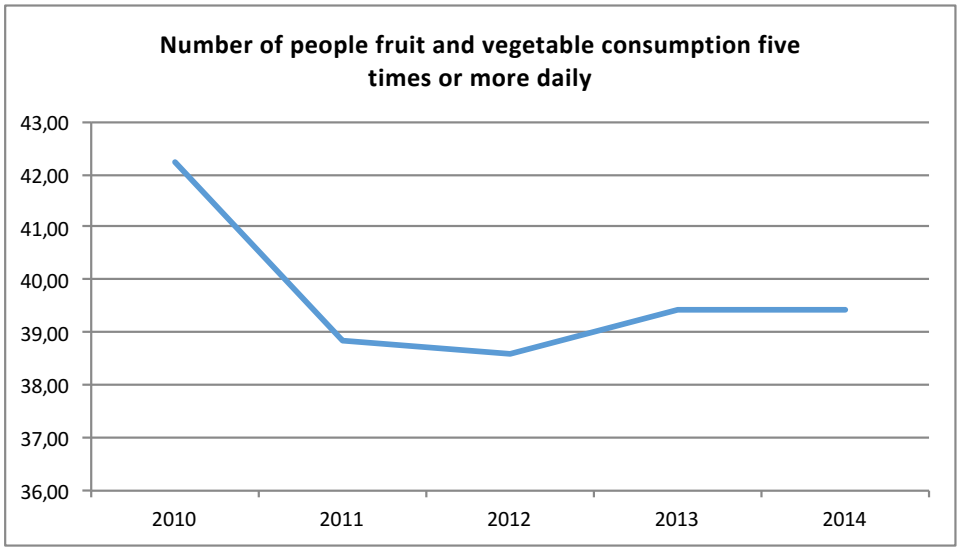

Figure 8: Number of people in study area who consume at least five servings of fruits and vegetables daily

Derived from Statistics Canada, Table 105-0501, Canadian Community Health Survey, Health indicator profile, annual estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups

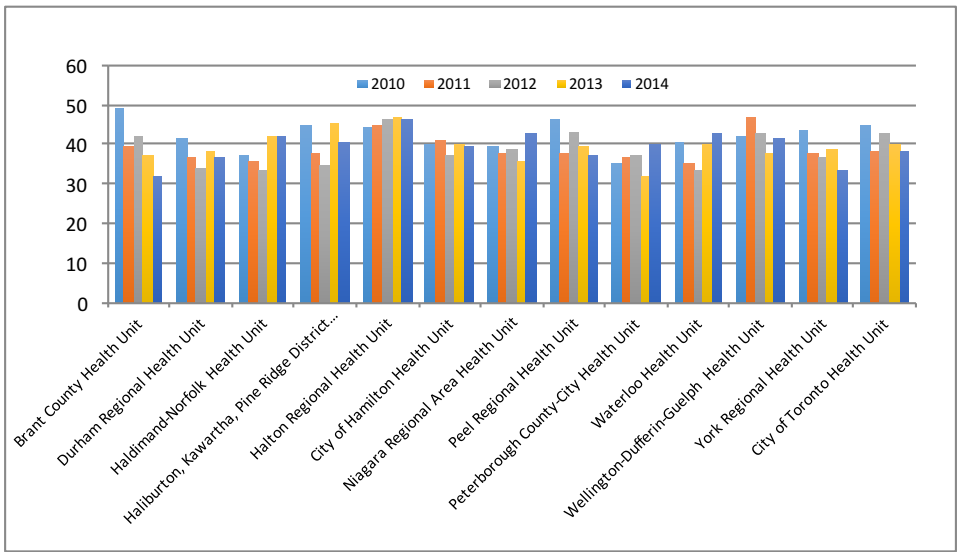

Figure 9: Change between 2010 and 2014 of fruit and vegetable consumption as reported by study area public health units

Statistics Canada, Table 105-0501, Canadian Community Health Survey, Health indicator profile, annual estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups

Nonetheless, some polls for the country show an increasing tendency towards fresher and more healthy foods: "An Angus Reid poll in February 2011 showed that 76 percent of Canadians are making healthier food choices compared to three years ago. Eating more fresh food was cited as the most common way people are improving their dietary habits; 42 percent of respondents were taking that approach as compared to 38 percent who said they had reduced their salt intake and 36 percent who have cut down on fat" (Cummings et al., 2014: 78). The shift to healthier food may also be a result of aging demographics (Walton, 2014: 3.6).

A shift towards ethnocultural cuisine, which is often higher in vegetables, is predicted for the GGH as 40 percent of Golden Horseshoe population are currently newcomers. However, one study shows that newcomer health tends to decrease in their first few years in Canada as they switch to their new home's diet (Access Alliance/TPH, 2011: 38). Some increase in interest in ethnocultural foods may in fact come from urban people enjoying the diversity their city offers. The World Crops Project through Toronto Food Policy Council, Toronto Food Strategy, the Toronto Urban Growers and the Vineland Research and Innovation Centre in Niagara have worked to develop varieties and markets for ethnocultural foods in the region.

The uneven availability, higher cost, access and distribution of healthy food, as well as culture-bound unhealthy eating habits, has led to a range of food-related health problems shown in Table 12 for some of the GGH counties. Although this data was aggregated from some counties in the GGH, seven counties did not supply this information for the Canadian Community Health Survey (CCHS).

Table 12: Incidence of some food-related health issues

HEALTH ISSUE	PERSONS	SOURCE
Overweight, Obesity Adult (self)	3 459 410	Statistics Canada CCHS, 2014
Overweight, Obesity Youth (self)	82 438	Statistics Canada CCHS, 2014
Malnutrition	168 deaths in 2012	Tarasuk, 2014: 6
Diabetes	545 182	Statistics Canada CCHS, 2014
High blood pressure	1 342 191	Statistics Canada CCHS, 2014

Sources: Statistics Canada 2013, Table 105-0501; Tarasuk, 2014: 6

Public health and nutrition programmes

Ontario public health units, along with various non-profits and charitable foundations offer a range of support programmes, from diabetes education to healthy cooking workshops. Recently, the Food by Ward reports from the City of Toronto show the availability of programmes and organisations for healthy eating for all. Toronto Public Health engaged in work to link access to urban agriculture and locally grown food to health through a Health Impact Assessment undertaken at the Black Creek Community Farm, which operates and engages people from a nearby low-income and priority neighbourhood (Toronto Public Health, 2015: 21).

Education

Education for food and agriculture also is a thread that connects the food system from field to waste. There is no aggregated information for food-related programming, curriculum or training. It is likely that the number is increasing; a review by the Toronto Urban Growers found 93 school gardens in Toronto alone. The Food by Ward study identified 116 community kitchens, most of which host a range of programmes from healthy eating to cooking from harvest to newcomer groups gathering over a meal of food from home. For agricultural education, OMAFRA and the Agricultural Management Institute (AMI) offer a range of training programmes focused specifically on business development, agricultural practices and food safety. Zizys found three programmes in Toronto linked to employment that provided training in various food sectors (2015: 16).

Zizys' research showed that 39 percent of participants in the Community Food Works programme found employment after the course (Ibid.: 19). VG Meats just outside the GGH area initiated their own training programmes for their workers at the retail store, and for skilled meat-cutters. The lack of skilled meat-cutters may mean that their trainees end up employed elsewhere, a problem that sectoral training can circumvent. A sector-specific training centre may achieve more concrete results through the partnership between the hospitality worker's union and major hotels in Toronto at the Hospitality Workers Training Centre (Ibid.: 21).

Other programmes for food and education training exist: for instance, there are important training opportunities at the George Brown Chef School, Durham College's Food and Farming Program, Loyola's programme focused on food technology, the Sandford Fleming Sustainable Agriculture programme and the Food and Nutrition Management programme at Humber College.

5.6 Food and organic waste

Although the original research framework identified waste as a separate food system area, it is in fact a thread that weaves throughout the food system. Table 13 below summarizes the percentage of waste from each food system area. The Recycling Council of Ontario estimates that 30 percent of the non-hazardous waste stream in landfills is organic and could have been composted or redirected (Uzea, 2013: 11).

Waste at a glance

- 207 326.5 tonnes annually
- CAD 12 billion in value wasted (ON)
- 9 percent agriculture
- 18 percent packaging/processing
- 3 percent transportation and distribution
- 11 percent retail
- 8 percent food service
- 51 percent consumers

Table 13: Waste by supply chain sector

SUPPLY CHAIN SECTOR	PERCENTAGE WASTE	TONNES
Field	9	18 659
Packaging / Processing	18	37 319
Transportation / Distribution	3	6 220
Retail Stores	11	22 806
Food Service / HRI (Institutions)	8	16 586
Home	51	105 737

Source: Uzea, 2013: 13; Cummings, 2014b: extrapolated from tables

Although Toronto's green bin programme has rerouted some organic waste away from landfills, there are many other steps that municipalities can take. For example, Vidoni (2011: 1) notes that "other jurisdictions in Canada, the US and the UK have more flexible regulations for the production of compost, and… this has allowed community-scaled programmes to play a much more engaged role in the management of municipal waste." Composting in the backyard, probably the easiest and cheapest approach (MacRae in review: 26), is not generally practised or supported. A Master Composter programme offered by the city has been discontinued (Vidoni, 2011: 37).

Economics

The total waste annually for the Greater Golden Horseshoe food system is estimated to be 207 326.5 tonnes (see Figures 10 and 11). The value of discarded food in Ontario is estimated at CAD 12 billion annually by the Ontario Waste Management Association 2016 (Uzea, 2013: 5). As Uzea notes (2013: 27), few Canadian businesses realize the savings that could be generated from reducing (rather than disposing of or recycling) waste. One restaurant chain reports almost half a million in annual savings from various energy and waste management tactics (Ibid.: 20). Even on a relatively small scale, diverting waste into composting as FoodShare does saves thousands annually in the city's processing costs (Vidoni, 2011: 29). MacRae (in review: 49) reports on another study based on eight case studies that found a 7 to 1 benefit to cost ratio in coordinated efforts across the supply chain. And waste means more jobs. According to Statistics Canada, there are 15 747 jobs associated with waste management in Ontario.

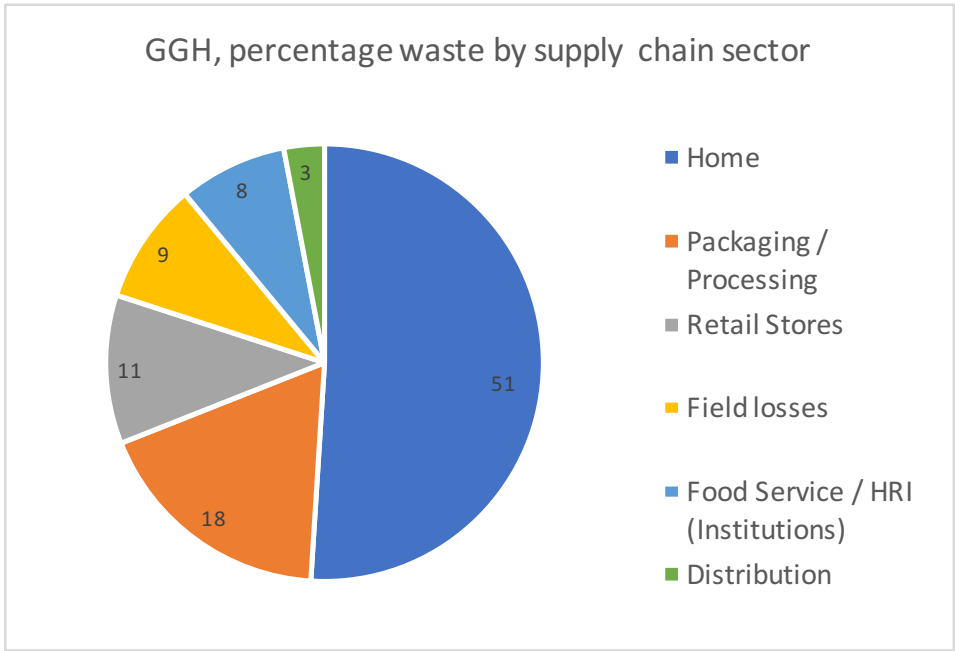

Figure 10: Waste by supply chain sector

Source: Uzea, 2013: 13; Econometrics Research Limited et al., 2014b: extrapolated from tables

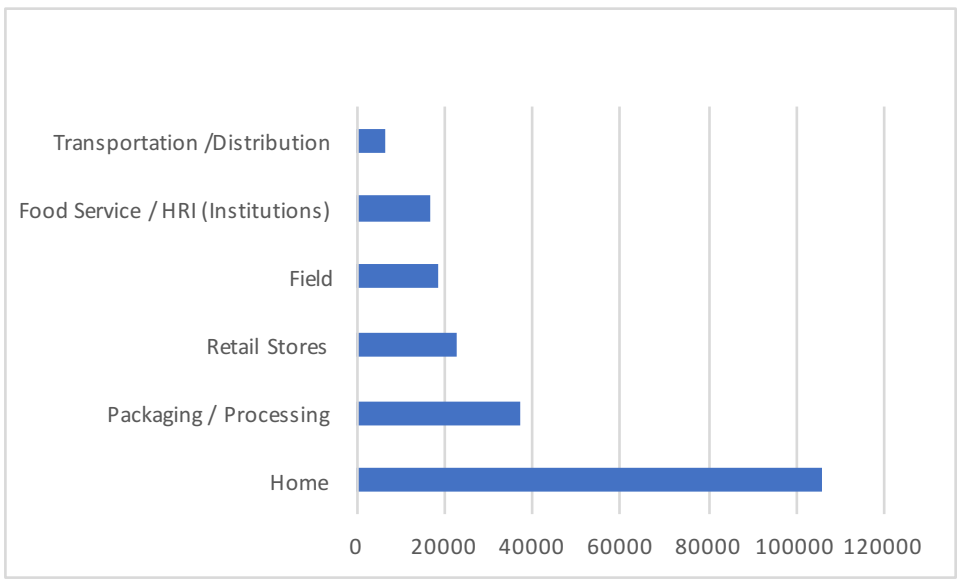

Figure 11: Tonnes (GGH) of waste by supply chain sector

Source: Uzea, 2013: 13; Econometrics Research Limited et al., 2014b: extrapolated from tables

Some of the waste (calculated at 9 percent by Uzea, 2013: 6) for agriculture stems from the consumer demand for uniform and blemish-free produce (see MacRae, in review: 11). Grade B produce ("seconds") may not be worth the time and cost to harvest if, in the end, it will go to the waste or compost stream. As a result, farmers often leave imperfect produce in the field and plough it in for next year. Thus, not all the nutrients are lost, but the potential of use for food is lost. Similarly, volatile commodity markets can mean a farmer will abandon entire crops in the field if the price has plummeted; paying for someone to harvest and for fuel for the harvester can easily become more than the going market rate when margins rest on a knife edge of difference between net profit and net loss.

Environment

MacRae aggregated the information from several studies on the impact and cost of food waste. He writes (in review: 3): "Food that is wasted is responsible for the release of 3.3 billion tonnes of greenhouse gases into the atmosphere and a global water loss of 675 trillion litres per year (Miller, 2012)." Following the study by Abdulla et al. 2013, he writes (Ibid. 5) that, at a conservative estimate, "…44 percent of food available for consumption is wasted/person/year, with fruits, vegetables the most wasted and pulses and nuts the least." Given the level of water used for irrigation and other aspects of food production, the waste of food means that the water used to produce food has also been wasted. "The amount of water used each year to grow and produce lost and wasted food would fill 70 million Olympic-sized swimming pools (UNEP, 2013a)" (MacRae et al., 2016: 10). As a general principle, since each link in the supply chain uses valuable water and energy resources, and contributes to emissions, shorter supply chains should reduce the negative environmental impacts of the food system (MacRae, Ibid.: 10). Likewise, the associated emissions and pollutants represent unnecessary and negative environmental impacts.

5.7 Who governs the food system?

Some people have argued that agriculture is the most regulated sector in Ontario, with overlapping and sometimes contradictory rules and jurisdictions. A Greenbelt review reported that "While there was general support from both the planners and the farmers for the purpose and objectives of the Greenbelt, there was also a sense that the layers of regulation (i.e. multiple approvals required from different agencies) were frustrating and time consuming" (Caldwell, 2013: 33). The legislation and plans can range from specific municipal food charters, such as the Toronto Food Charter, to requirements for nutrient management. These measures affect numerous aspects of farming as Walton shows (2014: 5.6). Public Health units and municipalities have also made important commitments and launched initiatives to support agriculture and healthy food consumption in their jurisdictions. These include a variety of Agricultural Advisory Committees, good food box programmes, charters, promotional and educational events for the agricultural sector, food handling training and certification and many other initiatives (see Walton, 2012 Appendices). Internationally, research found 15 import and trade regulations impacting the GGH food production[14].

14 www.international.gc.ca/trade-agreements-accords-commerciaux/ressources/fcm/summary-guide-sommaire.aspx?lang=eng

The food processing sector in Ontario is thoroughly regulated and monitored with 38 pieces of legislation listed on the OMAFRA website[15]. Carter-Whitney and Miller (2010) found that the regulations are designed to suit the practices of large facilities and can create challenges for smaller facilities. Walton (2012: Appendix 2) found over 200 value chain associations related to food, including commodity and sub-sector (such as grocery) associations. Nourishing Communities engaged in significant value chain review in their food hub research, including a broad survey of existing food hubs for Ontario in 2012; the case studies from that research are available online.

Distribution must respond to a range of trade deals based on the dependence on and access to export markets. There are at least 15 large-scale deals, from 12 Free Trade Areas to the more recent Trans-Pacific Partnership agreement[16]. As previously noted, the precariousness of NAFTA adds to the uncertainty in agri-food for many. Many of these affect regional production and markets (MacRae, 2014), though it is possible that local sustainable or organic products would be able to present the case for representing a non-competitive niche market. The wholesale sector likewise must be compliant with the range of food safety legislations totalling almost 40 different regulations[17]. The Canadian Food Inspection Agency includes wholesalers in their purview for oversight.

Although legislation and regulation of waste management is extensive, jurisdictional authority can be overlapping and contradictory. As Vidoni notes (2011: 9), the daily operation of waste management is at the municipal level, while the rules for hauling, processing and storing are regulated at the provincial level. For compost alone, he found five provincial acts regulating compost production and use in Ontario (Ibid.).

Figure 12 summarises the key information from the City Region Food System scan. It highlights key data including a map of the study area.

15 See www.omafra.gov.on.ca/english/food/foodsafety/compliance/allleg.htm.

16 See www.international.gc.ca/trade-agreements-accords-commerciaux/ressources/fcm/summary-guide-sommaire.aspx?lang=eng.

17 See www.omafra.gov.on.ca/english/food/foodsafety/compliance/allleg.htm.

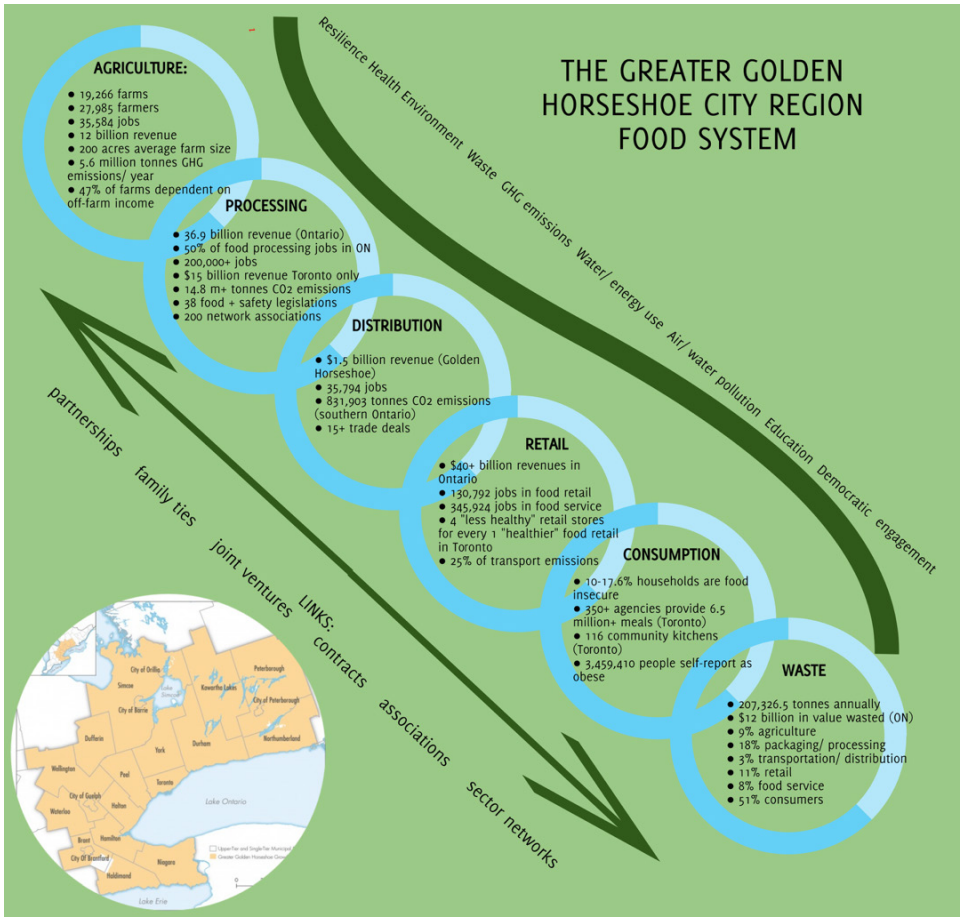

Figure 12: Summary of data across the GGH CRFS food chain

FOOD FLOW ANALYSES

6

While the previous section drew heavily on secondary data, the GGH CRFS project also undertook interviews and extended data analyses to understand food flow movements within the GGH. Staple food products readily produced within the study region, including carrots, apples, poultry and eggs and potatoes were chosen for food flow analyses. (Less elaborate case studies of dairy and beef are included in a separate report.)

6.1 A tangled web: the flow of carrots in the Greater Golden Horseshoe

The journey of a carrot from field to plate engages the entire mechanism of the food system, from the specifics of soil, environment and land use pressure to the tractor trailers and large-scale warehouses of the grocery chains, export brokers and southern distributor houses. The GGH produces almost 209.73 million pounds of carrots annually (Econometrics Research Limited et al., 2014a). The amount comprises 60 percent of carrots produced in Ontario, and over a third of the carrots grown in Canada.

Carrot production in Ontario is centred on the Holland Marsh, where the rich muck soil makes it feasible to operate a relatively more expensive fruit and vegetable operations due to increased inputs, labour costs and processing/storage infrastructure (see Figure 13).

Figure 13: Holland Marsh has rich growing conditions

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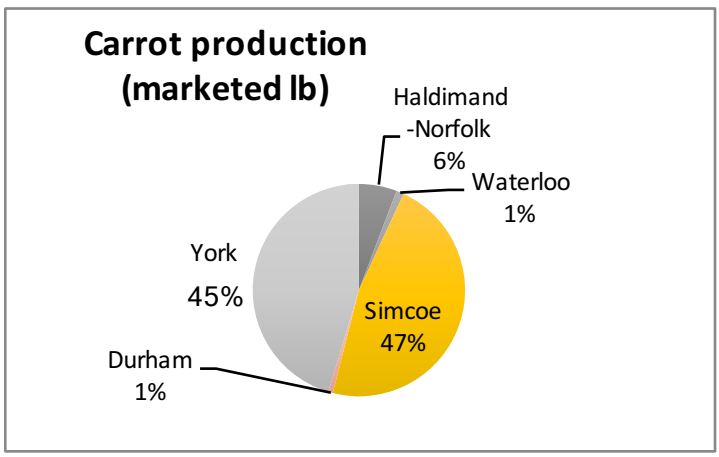
The Holland Marsh, approximately an hour north of Toronto by car, comprises 7 000 acres of this precious soil. The watershed north of the city contains other significant wetlands that have also been drained and managed for agriculture. The proximity of expanding urban areas combined with the fact that it is one of the major network of tributaries that form the watershed for Toronto, and that the area is a prime agricultural and economic profit centre in Canada, creates a perfect storm of conflicting interests and goals. The concentration of production in the Holland Marsh means that the regional production is undoubtedly higher than regional markets can accommodate. Carrot production in the GGH is focused in York and Simcoe regions which share the Holland Marsh and similar key muck soil areas north of Toronto, see Figure 14.

Figure 14: Carrot production in the Greater Golden Horseshoe



Source: Econometrics Research Limited et al., 2014a [Extrapolated from the Econometrics Research Limited 2014a report based on 2011 Census of Agriculture.]

Canada exports (approximately 20 percent) and imports (approximately 25 percent) of its carrots, and Ontario is a net exporter (see Figure 15). Carrots may be exported for processing, for example, to the US to be trimmed into “baby” carrots or shredded for salad mix. One grower in our research sent carrots to California to be trimmed in the large facilities there when the drought affected the US harvest. These carrots may easily return to Canada in their new form. The flow of carrots and other horticultural products engage the movement of people and goods well beyond the GGH in paths that are complexly determined by price, availability, harvests in other countries, currency rates, and access to infrastructure to move product along some channels and not others (storage, processing, distribution).

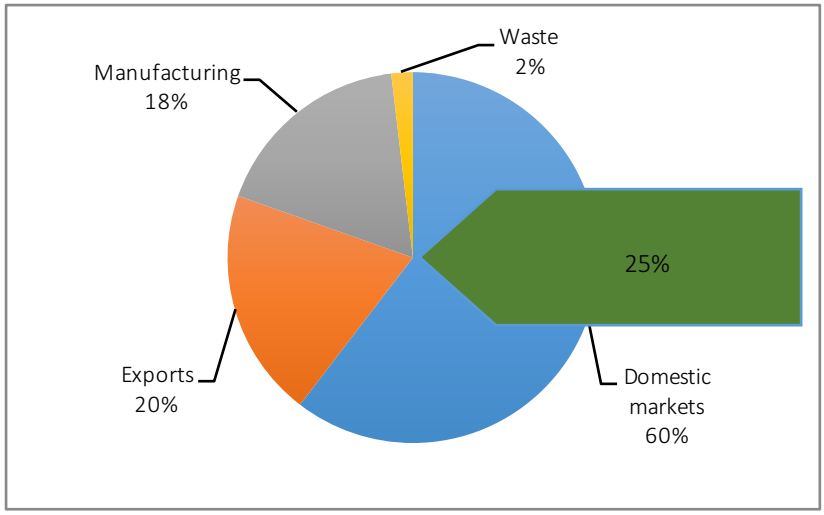


Figure 15: Flow of carrots in domestic, import and export markets

Source: Statistics Canada 2015, Census of Agriculture,
Table 002-0010 Supply and disposition of food in Canada, annual (tonnes x 1,000)

Consumption of carrots in the GGH can be estimated as close to 212.59 million pounds based on an annual average Canadian consumption of 3.92 kg/person (Statistics Canada, Table 002-0011, Food available in Canada). The carrots consumed in the GGH are not, of course, all produced in the GGH. A casual review at the carrots on display in supermarkets indicates that many come from the US, which represents almost 98 percent of carrots imported to Canada.

The DEFRA report in the UK (2006: 49) shows environmental impacts by commodity sector. For carrots, they report that fresh and bunched carrots have around 0.4 kg CO_2 equivalent per 600g serving in global warming potential, mostly from consumer transport to the home. The amount is higher for frozen carrots.

Summary

This discussion of the challenges, flows, innovations and barriers for carrots lays the groundwork for understanding the GGH food system. The flow of a single carrot from seed to bag to the consumer's plate to the final deposit of fronds and ends in compost or trash is complex and not unidirectional. Carrots may take a circuitous trip, even crossing national borders more than once, before they reach their final destination. Numerous considerations and strategies guide this trajectory through the webs and flows of the food system. Carrots describe an ever-changing route through prices, available distribution, storage, transport, consumer demand and preference, climate impacts here and abroad, grading changes and currency rates. The story of Avia and Bill Eek (see Box 4) provides a more human face to this business and the challenges that family farmers face as they grow food for the GGH and beyond.

This section provided an overview of key food systems challenges and opportunities in the GGH from field to plate and unpacks how they determine the flow of carrots from inputs through markets then consumption to compost and materials redirection from the food supply. In the following sections, the focus is on the remaining top foods identified by the CRFS Task Force: apples, chicken (meat and eggs), potatoes.

Box 4: Farming the Marsh

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Avia Eek and her husband Bill are part of the multi-generational farming tradition of the Holland Marsh. Bill Eek's family was one of the first 17 settlers of the Marsh, arriving in 1934. The early settlers in the Marsh faced on undrained wetland with thick and tangled undergrowth and overgrowth of roots, which had to be cleared before the canals could be built. The early settlers were mostly from the Netherlands, with experience turning flooded lands into fertile agricultural soil. "We look forward to a time when Holland Marsh will supply the head lettuce for all Canada during the summer season, instead of its being imported from California, Arizona and other American states." (VanderMey, 1994: 6).

Bill Eek's family began with lettuce, celery and onions but competition from financially supported farmers in Quebec and the cost of packing made these industries less viable, so they now focus on carrots. Their carrots are harvested and stored in bulk. Once they have made a satisfactory arrangement, the carrots go to a packer who washes, sorts, bags and sells them for export or to the mass market Canadian or transnational retail chains. Like most commercial scale farmers, they rely on migrant farmworkers from Mexico, Trinidad, Jamaica and other countries in the global south.

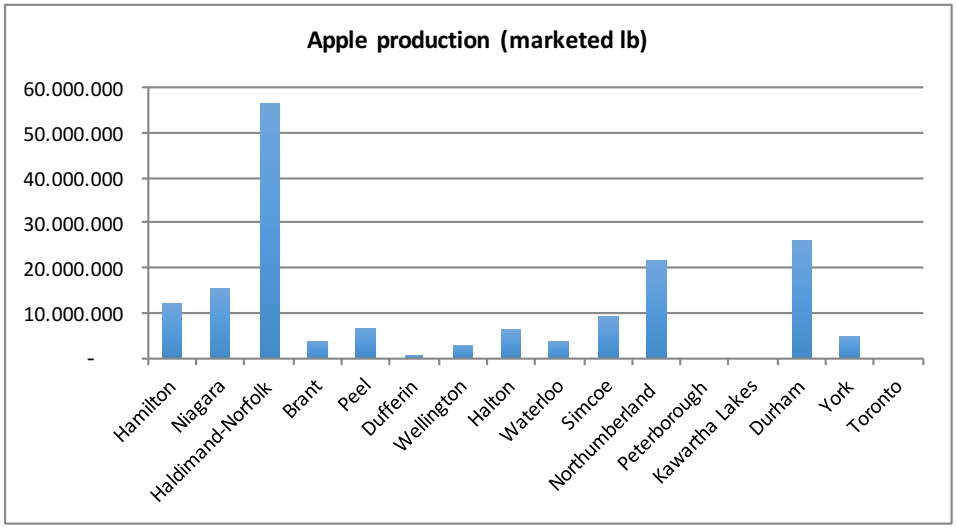
6.2 Apples: commodities for health and profit

The following section examines the apple sector. In terms of health implications, and familiarity of the food across multiple demographics, apples are an excellent place to explore sustainability and resilience in the GGH food systems. Apples are an example of a supply chain with many of the characteristic attributes, challenges and alternatives described above. The apple sector also has unique characteristics, with distinctive supply chains and networks. These networks and the innovations in the sector offer salutary examples and ideas for other supply chains.

Fruit trees are perennial, with an expectation of at least 25 years of harvest (longer for the semi-dwarf varieties) and high start-up costs. An error made at the beginning cannot be rectified by planting something else the next year. Kelly Ciceran, Executive Director of the Ontario Apple Growers (OAG), described apples as one of the hardest crops to grow (interview). The supply chain begins in nurseries in the US and Canada. As with other commodities, pesticides may come from an Ontario supplier (who may be buying from the US), but high-tech equipment tends to come from farther afield; the research showed that much of the equipment, particularly for innovative marketing or processing projects, is brought from Europe. Packaging can come from a company in Brampton, a large city in the GGH, or import, depending on price.

The new high-density methods permit close plantings pruned tightly like grapes, allowing more rapid shifts to new varieties to meet consumer preference, reduced labour costs and high quality. With around 1 000 trees per acre, the start-up costs have increased. In 2014, Statistics Canada estimated a total of 15 939 acres of orchard in Ontario, with the majority in the central, central west and eastern regions of southern Ontario. McIntosh and Gala represent over 30 percent of the acreage. Despite local supply, apples are regularly imported, representing over 50 percent of apples in Ontario. The varieties are the same as those grown in Ontario orchards: Empires, Galas and others (OAG, 2015: 12). Production marketed in the research area can be identified by county or region (note that Toronto is no longer reported by Statistics Canada, as the numbers are deemed to be too small to report). Production in the GGH represents 43 percent of Ontario's apple production, clustered at the edges of the research area.

Figure 16: Apple production (marketed lb)



Source: Econometrics Research Limited et al. (2014a)

Ciceran notes that apples and pears are the only fruit where the market is by variety rather than general name. The new varieties may be "managed varieties", a diluted version of supply management in which a proprietary variety (e.g. Ambrosia) is managed for price and supply. Growers pay fees to use the variety, and pay a portion of the cost of marketing it; they commit to producing a pre-determined volume as well. The OAG partners with the Vineland Research Station in the Niagara area to develop new varieties, as well as other provinces and government departments. The OAG spends a considerable proportion of their budget on research into pest and disease control. According to the OAG's annual report (2015: 7), one county, Haldimand-Norfolk, dominates Ontario production and marketing in 2014 and 2013 (see Figure 16).

Table 14: Ontario Apple Production and Market Destination

MARKET	AMOUNT (MILLION LB)	
	2014	2013
Fresh	270.7	293
Orchard juice	21 (grounder)	61.7
Other processing	36.5	44.6

Source: Ontario Apple Growers Annual Report, 2015. Available at: www.onapples.com/uploads/images/files/OAG-Annual-Report-2015.pdf

Figure 17: Apple storage and marketing

Source: Blay-Palmer, 2007

Statistics Canada shows a trade deficit for Canadian apples (and regional market opportunity) with 23 982 metric tonnes exported and 200 087 metric tonnes imported. Even accounting for some varieties that are hard to grow in Canada (such as Pink Lady), there may be considerable opportunity for import replacement. Consumption in the GGH, based on average consumption data, is about 51.7 lb per capita, totalling almost 453 million pounds for the GGH alone. Production therefore trails consumption by about 283 million pounds, a promising amount for new and expanding apple growers. These numbers are necessarily general; as in other sectors, the commodity may be exported for processing and then imported back for sale, suggesting further opportunities for economic development further up the supply chain in Ontario.

As in other commodity sectors, apple growers are paid on “pack-out”; that is, anything that is sorted out for not meeting the requirements for sale will not be paid to the grower. Growers pay various fees to the packer, including storage and packing fees. Generally, growers receive lump sum payments after the product is sold for whatever price the packer can command from mass market. As in other sectors, the price is pooled so that growers are paid equitably based on an average rather than the final destination of each piece of fruit. The growers may also pre-sort; the goal is to have 99 percent pack-out of apples that reach the facility.

Some packers pre-sort before storage. For example, Martin (see further Box 5) reports that in general the sector is moving towards “tree-run” in which everything is picked and stored at once (rather than grading in the field as has been done in the past). The facility packs to order; the packing line is designed to sort size and return apples that have not been ordered back to storage; the line gently moves the apples along to avoid bruising, with human checkpoints to pull out damaged fruit. Their goal is 80 to 90 percent graded number 1 on pack-out. Any damaged fruit can go to juicers such as Golden Town, a company from Quebec, or to Martin’s new apple chip processor. Generally, produce that cannot be used for processing is composted or fed to animals. More detailed market destination numbers are available in Table 14 above.

Martin’s stated preference would be to sell everything regionally; the market opportunity is there, and could be met by local production (source: personal interview). Export is generally accessed for surplus product. Certain varieties such as Empires have become hard to sell locally but can find a ready export market; changes to the US relations with Mexico may open a market there as well. Martin’s has also diversified, reducing the vulnerability to changing markets. They have a bustling farm store that sells many apple varieties in bulk, bushels and bags. The store also purchases a range of other fruits and vegetables from other growers as well as the Ontario Food Terminal.

Martin's recently built an apple chip processing plant as well, a significant financial investment and risk that has paid off in sales as well as a secondary market for product that cannot be sold as fresh (generally between 10–20 percent of the crop). The chips are all natural, with spices added but no sugar or preservatives. Since most apples for processing are exported, the new apple chip factory represents a significant innovation. The product has been sold through the farm store as well as the big supermarket chains.

The new "ugly fruit" line at Loblaws has opened an additional market for seconds; however, the seconds have historically gone straight to the juice market (for example, Wellesley or Golden Town in Quebec or Thornbury). C-grade apples that cannot be sold as fresh but are better than juice apples and can be sold to a processor for apple sauce or pie filling. Grading less heavily for a new "ugly fruit" market requires a new approach. Martin remarked, consistent with other interviewees, that there was some concern that the ugly fruit market would cut into the top-grade sales rather than increasing sales overall.

As in the case of carrots and Holland Marsh crops, Martin's uses scouts to locate incipient pest problems. They also track temperature and moisture to reduce spraying as much as possible and predict or identify pest outbreaks before they are out of control; even without environmental reasons, farmers recognize the huge cost of spraying and reduce it as much as possible. As in the case of carrots, apple growers struggle to compete with growers in the US that can use products not yet approved in Canada. The practice is a fine art, to reduce inputs as much as possible while not missing the signs of a problem that can eventually ruin a whole crop.

Environment and the apple sector

The environmental impact in energy for apple production is largely in cultivation and consumer shopping, followed by storage and packaging according to a study in the UK (DEFRA, 2006: 47). Some innovation around packaging has occurred; the Vineland Growers' Co-op developed a clamshell package made from recycled drink bottles, although it is currently not listed on the website catalogue (Bure, 2015: 2). (For a case study on apple crop failure, see chapter 8).

Innovation

Cider represents a new processing opportunity that is expanding rapidly (with concomitant growing pains). The sector is in a growth and development stage in which stakeholders across the supply chain are negotiating new ways of interacting. New cider processors have blossomed across southern Ontario, while varieties and seasonal availability at the supply end may not have developed to match the new market (Ciceran interview). The rise in cider has coincided with a series of poor crop years, which has meant that when cider processors who did not have their own orchards sought out spring apples for a craft beverage market that is seasonal (summer), the local apples were already gone. The Craft Cider Association is working, among other things, to develop contracts with growers for this new market (Ciceran interview). The advent of contracts would be new in Ontario; as with most commodities that are not supply managed, the grower and packer do not know the price ahead of time; growers will know payment levels only when they receive the cheques based on whatever the market offered that year.

Networks

Key networks have helped to shape and manage the sector, including the OAG. The OAG grew out of the Ontario Apple Marketing Commission, which had a standard marketing board structure, with price controls, marketing and research/development services. They restructured in 2004 to form the current organisation with a focus on government relations, promotion, research/development and grower education. They are funded by a CAD 25 per acre fee paid by grower members. Membership is mandatory for growers with ten or more acres, and voluntary (non-voting) for smaller orchards (for a flat fee of CAD 200). They currently have 180 growers with ten or more acres. Rather than relying on a supply managed system (with prices set by a central board), prices are averaged through the packing process, so that growers share the impact equally from price slashing or windfall profits. Apple growers work with each other through the packers and the sectoral association, and with other horticultural groups, as well as with government for the labour programme, research and development and support payments.

Summary

The apple sector shows an important ability to adapt and respond to changing conditions. Martin's offers an example of successful partnerships across many climates and many farm scales, as well as diversification to provide a range of markets to respond to different crop years, and value-added options to process fruit that cannot go to the fresh market (see Box 5). The new high-density orchard practices combine with value-added innovation to reshape a struggling sector into a robust and resilient source of a food that can be key to a nutritious diet.

Box 5: Martin's Family Fruit Farm

Martin's Family Fruit Farm is an orchard and packing operation in the region of Waterloo. The farm has been in the family since 1820 when the current manager's great-grandfather purchased it. A Yugoslavian exchange student persuaded his grandson, Leighton Martin, to try apples, judging that the particular conditions there would be ideal. They began with 100 trees, and now have 700.

Martin's is in a sub-sector facing tremendous pressure from apples grown from elsewhere, either BC or from beyond Canada where labour costs are lower. Many orchards have folded in the last 10–15 years. Volatile weather made the situation worse; in 2012, almost all the apples were lost through a late frost on the blossoms. In 2015, about 50 percent of the crop was also lost to frost damage. Martin's was able to remain in the business, and is now seeing a surge in demand based on the interest in local food, so by mid-winter they run out of most varieties. They have made shifts and new investments, including changing the way they manage the orchard. Trees are planted close together, grown on wires, and trimmed tightly; new varieties are grown. Over the last ten years the high-density planting has helped them survive.

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They pack according to orders as they come in, ensuring a better-quality product. The packing facility is on the farm, so the apples are stored right off the tree with minimal travel, ensuring less bruising than orchards that must ship to packing facilities. They do also contract with other growers, mostly within a couple of hours of the farm. They work with 16–20 other growers, including some Mennonite growers. The contract growers range from 20–500 acres in size. They have worked with some of them for 30 years.

The packing line is complex, allowing for a range of types of packing. The pre-sort line moves the apples with rolling brushes out of the bins past human workers who sort for decay. Then they will be sized for today's market needs; some will be sent back to storage to await demand for that size. At that point, they might enter the line the next time as presorted and go straight to the next step. The apples go through additional cleaning and drying, then waxing. The waxing makes up for the removal of the natural coating that occurs during washing. They are weighed and loaded into polybags or boxes by size.

Their market is almost entirely in Ontario; export markets are used as back up and only for products (sizes or varieties) that are not selling locally. Steve Martin told the tour "we see local as all the growth we need for years to come." Although organic apples are hard to grow in southwestern Ontario, they use Integrated Pest Management (IPM), and avoid pesticides that might be an issue in the EU. They maintain a fairly large on-farm store as well.

Martin's recently built a processing plant for dried apple chips; unlike most apple chips which are deep fried or freeze-dried, these are simply dehydrated apple slices with no additives. The new value-added product has turned out to be a successful addition to the product offering that has been welcomed by large retailers. The chip line also reduces waste on the farm by providing another potential stream for surplus product. As for the growers they contract with, they have been able to offer them more returns. Steve's father worked with the Mennonite growers to set up their own high-density orchards and grow new varieties. Now there are 18 of them participating, mostly with around 10 acres.

6.3 Chickens and eggs come first in Ontario

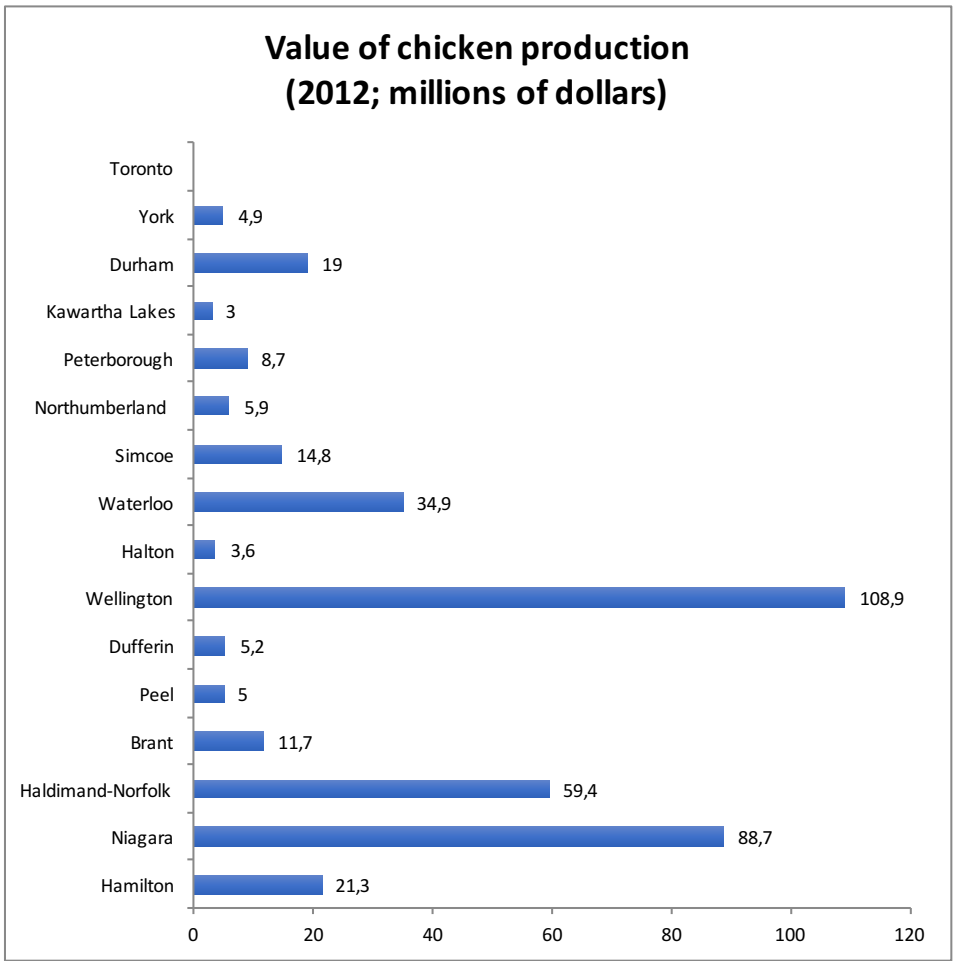
This section reviews the chicken and egg sectors in Ontario and the GGH. Chicken was identified as a key food by the CRFS Task Force due to its contribution to a nutritious diet, as well as its place as a supply managed commodity. Liquid milk and eggs are also supply managed. Supply management provides price support and some marketing security for farmers in Canada.

Chicken also represents a common food that crosses cultural preferences in the GGH diverse demographics. The research found that there is some overlap in the model and sometimes in businesses for chicken and eggs, so they were both included in the assessment.

In 2014, chicken producers in the GGH accounted for almost 178 million kg of meat, while consumption in the GGH is around 287 million kg. Eggs are also produced in deficit to consumption, by more than 535 million dozens of eggs annually in 2014. About five percent of eggs are also imported, according to one interviewee; three percent of chicks are imported for the broilers as well. Overall, 17 percent of hatching eggs come into Canada from the US without a tariff charge.

The poultry industry makes a significant contribution to the GGH economy (see Figure 18). Although urban expansion creates pressure on livestock sectors to move to more rural areas, considerable concentration of chicken and egg production remains in the GGH. In total, 51 percent of chicken production and 30 percent of egg production for the region occurs in the GGH. The Chicken Farmers of Ontario (CFO) report that chicken production in 2014 contributed CAD 819 million to the GDP and 11 409 full-time jobs (2013: 1). They calculate that the revenue from the sector commands a 2.29 multiplier, circulating money more than twice in the local economy (Ibid).

Figure 18:. Value of Chicken Production by County.



Source: Chicken Farmers of Ontario, 2013

Inputs to the sector contribute to the multiplier effect: 23 percent of the value from Ontario's feed mills went to the sector in 2012, representing a total of CAD 342 million to feed manufacturers. The CFO reports that chicken producers purchased ten percent of the 2011/2 soybean crop and eight percent of the corn crop in the same period (2013: 8). Some 19 percent of soybeans crushed in Ontario went to Ontario chickens (that is, out-of-province soybeans are crushed for the chicken industry as well as a portion of the local crop). The flow of inputs is not always straightforward; one farm produces their own soybeans, but sends them by the truckload to a processor in Hamilton to remove the oil to process it for feed-appropriate soy meal; a truck takes the beans to Hamilton and brings the processed soy meal back.

For organic chicken producers, inputs such as organic feed represent a significant portion of the cost of production. Processing and chicks are the other main costs. Organic certification has not been developed for small-scale production, which can create barriers as well (as in the case of one producer who has only 1 000 units of quota). Smaller farms can face challenges with raising capital as well as Farm Credit Bureau and other conventional lenders may consider the operational revenue too small to fit their lending requirements.

The chicken and egg farmers that were interviewed maintain acres for grain production as well as the barns for chickens. The grain can be sold into the supply chain or used as feed at the farm. Chicken and egg farmers experience greater restrictions than other sector operators on the basis of environmental impact (processing the manure) in the way that a field of carrots might not be scrutinized. A change of clothing, especially boots, may be required to enter and exit any operation. This fact contributes to what one farmer mentioned was a somewhat lonely occupation. Automation has meant that one or two people can run the whole operation, with a team to help clean out between cycles. Biosecurity means that chicken farmers do not readily visit each other's farms, for fear of bringing contaminants from one to the other.

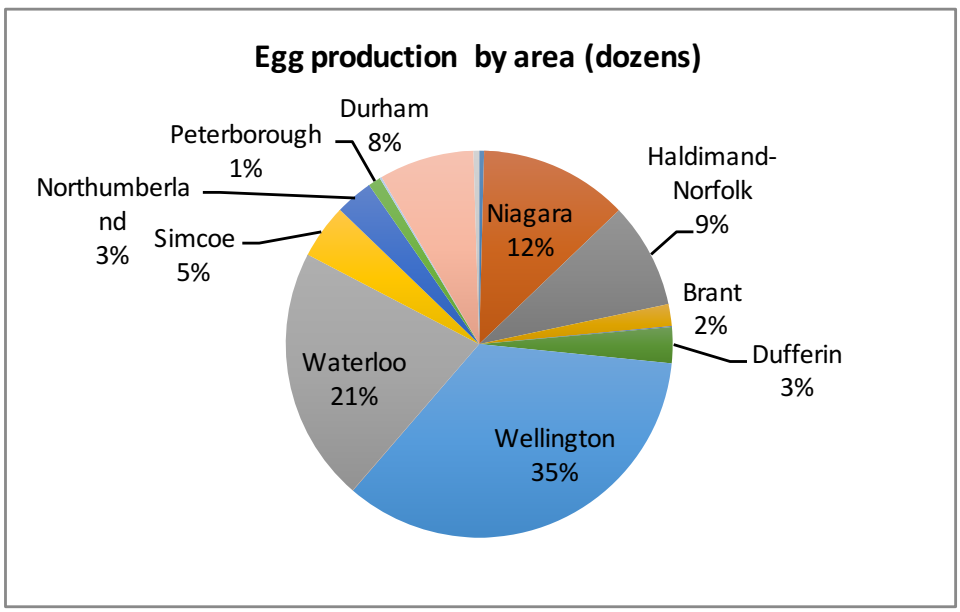
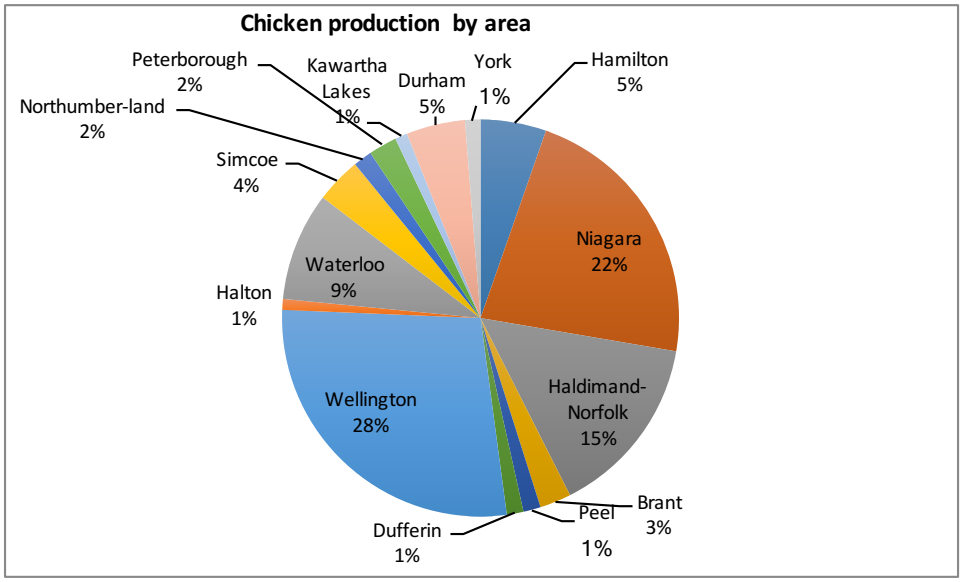


Figure 19: Egg Production by County.

Source: Econometrics Research Limited et al., 2014a

Egg production is concentrated in two counties, Wellington and Waterloo. Figure 19 shows the distribution by region in the GGH. Similarly, chicken production is focused in these two counties, as well as in Niagara (see Figure 20). The concentration depends even more than fruit and vegetable production on the availability of processing infrastructure. Long-distance shipment to abattoirs tends to result in injured animals that cannot be processed for food, and increases the stress levels of the transported animals. The availability of processing plants, however, does not exactly correspond to production levels. Niagara has more processing plants (three) whereas the highest production area in Wellington has only two. Haldimand, third in production, has one, whereas Peel, with one percent of production, has two. The lower numbers with greater production are presumably larger plants, or at least plants that process more over time.

Figure 20: Chicken Production by County



Source: Econometrics Research Limited et al., 2014a

Many factors affect the placement of abattoirs, including municipal regulations, density of housing and history of regional production. Over 200 Toronto sites that process meat at various stages are listed in the GHFFA asset maps. These are not all abattoirs; some are taking portions of carcasses and processing them further for specific markets. While no chickens are produced formally within the City of Toronto, it still has abattoirs known as the Stockyards, historically an area on the urban fringe with a concentration of meat-processing facilities, now an area of densification and residential development. Although the integration of industry, retail (supermarkets, box stores) and housing is a powerful model, it is not supported by planning trends; it would be difficult to replicate in parts of the city that are not already zoned industrial.

Consolidation has meant more specialisation. As described in the case study (see Box 6), one egg farmer reported that in a few decades, their business had gone from the model of a vertically integrated producer, grader, purchaser and regional distributor to a focus on production and feed; most producers no longer do their own feed either. This Durham area farm still grows their own pullets as well, working in a cycle using three barns (one for chicks, two for laying chickens). For eggs, two main grading stations still exist in the GGH who together operate five plants in Ontario that process 90 percent of Ontario's eggs.

The cycle from farm to store is rapid; farmers send eggs for grading on Monday and Thursday, and the eggs could be in the grocery store by Friday. Like chicken, most of the eggs are sold provincially but some go to inter-provincial trade. In most cases, eggs sent to the grading station are pooled with other eggs; a farmer cannot send them off to be graded and get the same eggs back to sell. The Durham region egg producer described in the case study has retained the grading license for sales through the farm store.

Box 6: White Feather Farms

White Feather Farms Schillings' father immigrated from the Netherlands to Ontario in 1951. In 1963, Hubert Schillings parents, who were farming in Port Perry, bought the farm where the family now runs an egg production operation, grain processing and storage, and grainfields, as well as an on-farm store. Initially they had a grading station, as well as layers and cropland. They graded their own and other farms' eggs. They would keep any they needed to meet their sales and return the others to the producers. He spent his first ten years on the road, making egg deliveries three days a week in Oshawa, Bowmanville and Whitby.

Once the quota system came in the 1970s, they took that on and stopped delivering eggs in 1984. They decided to focus on production, recognizing that they would need to expand the grading operation to make it pay. They have kept the license, however, and now grade for the farm store so they can provide their own eggs. White Feather Farms comprises a more vertically integrated operation than many egg farms, with three barns, 1 500 cropped acres, the grading facility, grain elevator, dryer and a feed-mixing facility (digitised with specific recipes and mechanical processes). They grow flocks of pullets as well as managing the layers (rather than buying the pullets from another operation) – 90 percent of the pullets go into their own two barns for laying. Large operations tend to grow their own pullets, which gives them control over what goes into the laying barn, and reduces the trucking needed for the operation. However, White Feather Farms is now the only operation in Durham Region that does it that way.

In 2003, they switched the Port Perry farm to broiler production. The feed for both types of production (chicken for eggs or meat) is processed at the Durham location. The vertically integrated operation has grown with changes in the egg and chicken industry. The diversification brings a measure of resilience and adaptability to pressures and change, but might be hard for a new farmer to replicate given the cost of quota, new infrastructure, land and the need to get permission for a new grading station. The lack of widespread grading station has thwarted the development of egg farms in some regions. The success of the Schillings' operation suggests that some of the barriers to diversification should be reconsidered.

Supply management

The sectors are under supply management, beginning in the 1970s for eggs and the 1960s for chicken. Schillings reports that there are only 350 egg farms in Ontario with quota, representing about one-third of all Canadian egg farms. In Durham region including the Schillings' operation, there are still seven egg farms. Supply management is a federal programme. In Ontario, the programme is supported and managed by the Chicken Farmers of Ontario. Chicken and egg producers have quota that determines the volume they can produce. The price for chicken is determined for an eight-week period based on the price of feed (which varies as a commodity based on transnational price fluctuations). The programme protects the producers from violent price shifts and competition from other areas that have lower costs of production. Supply management creates stability for a food-producing sector that permits long-term planning and infrastructure investment. The arrangement

also contributes to stable succession, as the next generation sees the value in entering a stable business (although if the young farmer wants to enter a different sector, they face similar barriers to non-traditional entrants, and the cost of, if necessary, buying the quota from their parents can also be prohibitive). Quota can be used as an asset base for loan capital, which has allowed supply managed producers to invest in land and other infrastructure where other sector producers struggle to access capital. However, the quota system has created barriers for non-traditional new entrants. The cost of quota, if units are available, is very high. The high price of quota (and the fact that it is rarely sold at all) adds additional start-up costs to the already prohibitive cost of land (for a family perspective on supply management refer to Box 7).

The recently launched Family Food and Artisanal Chicken Programs have redressed this to some extent, allowing entry under specific circumstance and regularizing the practice of unregistered chicken and egg production practised by farmers who use the manure on their fruit and vegetable crops, and sell small amounts through direct sales at farmers' markets, CSAs and farm-gate sales. The programme brings these production sites into standard food safety regulation and also permits northern Ontario farmers to re-enter the sector. Loss of infrastructure led northern farmers to sell their quota to large southern Ontario farmers; the programme allows northern farmers to rebuild regional chicken and egg production.

Marketing for broilers is done by the processors. About 60 percent is carried out by Maple Leaf and Maple Lodge. Another 15 percent goes to Cargill for MacDonald's. Small processors continue to survive to cover the rest of production. The destination of one producers' chicken may be months in advance. These relationships can be arms-length or somewhat integrated. For instance, Maple Leaf has specifications now for feed, and requires producers to buy the feed directly from them. From the processor, the product can go to mass market, food service and other markets unknown to producer or to processor, as generally meat is aggregated at the processing level.

Grading stations likewise aggregate and market eggs from numerous producers. Schillings noted that the processors tend to specialise with a few large customers, with one selling to McDonald's and the other going to Tim Horton's (two large fast-food corporations) even though the price is determined through the supply management programme. As in the case of vegetable packers, the producer is paid after the product is sold. Generally, supply management means that marketing is mostly within or between provinces (Ontario is a net inter-provincial importer of chicken). Chickens can be exported, and one farmer noted as a problem that the US has been processing and sending "spent" hens (that is, hens that have passed their laying stage, after about one year) into Canada.

Box 7:
Chickens in Halton

Chicken operation. ©FAO/ Miller, 2016

On one typical farm in Halton Region, John Opsteen and family raise approximately 350 000 broiler chickens each year, on a rotation of 8–9 weeks to grow, followed by a full clean-out of the barn, then another cycle of birds. Within this farm family they have also created partnerships that have eased the succession process. There are two separate farms. Each brother is in a partnership with one parent; over 20 years the brothers have taken over the management of the farms, and were supported by the farm without the high capital requirement to buy the valuable land and quota.

Although Opsteen runs an average operation on this farm, with just two barns, two levels each, some producers have as many as 16 barns. Barns are open for broilers; caged birds are only used in the egg industry. The barns can be automated to control temperature, air circulation and correct levels of feed at different stages of growth; the systems can be integrated through computer control, or manually in older barns. Opsteen owns quota specifying the weight in chicken that he can produce each year (rather than the number of units).

To sell the chickens, Opsteen contracts six months in advance with Maple Lodge; the price is set uniformly for all chicken producers through the Canadian supply management system. The Opsteen family moved their product to Maple Lodge when their former buyer began to require producers to buy the feed from them to be allowed to process there. Maple Lodge offers a bonus if the chickens meet their own specifications (higher than required), or if the loss rate on chickens sent to be processed is lower than average. Maple Lodge also owns the hatchery in Niagara where the Opsteens get their chicks.

Innovation

Recent innovations include the transition to enriched cages, which will provide more space, and opportunities for three key behaviours for the birds: pecking, roosting and nesting. Although free run has been popular with consumers, Schillings argues that it results in more residual manure. High levels of dust and ammonia in the air create an unhealthy environment and challenging workplace. The manure in the cage barns is removed regularly and composted to be returned to the fields, leaving the barns clean and the air fairly pure.

The large corporations have the ability to make significant changes in their environmental impact, and some have done that; there has been a move to air-chilled processing for meat to reduce water use, and other measures. Maple Leaf reports reductions in energy use, water and a 91-percent waste diversion rate in 2015 (Faveri, presentation). Maple Lodge reports savings of CAD 52 982 annually and 275 000 litres of water daily with their new air-chilling system.

Networks

As with other sectors, chicken and egg farmers can participate in networks representing the region, like the Greater Toronto Area Agricultural Action Committee (GTAAAC) and the GHFFA, as well as sector-specific councils and associations. John Opsteen (see also Box 4) represents the Halton Federation of Agriculture to GTAAC, as well as chairing the Halton Region Agricultural Advisory Committee. These positions have given him a chance to represent farmer and sector interests in the development of a regional official plan, as well as the new provincial coordinated review.

Hubert Schillings is the district representative with Chicken Farmers of Ontario (the board that sets production levels under the supply management system), and has been on the code committee developing the regulations and process for transition to enriched cages. Representatives from the Canadian Food Inspection Agency (CFIA), Ag-Canada and the grocery industry also sit on the committee. On the marketing side, consolidation has meant that corporations such as Maple Lodge have considerable power in the marketplace and policy development, alone or through various sector organisations.

Change and challenges

Producers, including poultry industry representatives, noted that, despite these networks, they still face a challenge in getting their point across and getting structural response to their demands, although some of that has changed with the coordinated review. Changes in agriculture (such as free-run methods) are perceived to be driven by the big supermarkets redefining themselves but not consulting farmers on the best approach to achieve the goals of animal welfare. In other cases, such as restrictions on composting manure on-site, there is a sense that environmentally motivated positions (particularly consumers) drive change regardless of science or actual environmental services. Similarly, the increase in hydro costs may help Ontario manage and reduce energy use, but for producers the immediate impact is an increase in one of the main costs of operation for chicken or egg producers.

These instances suggest that having a voice is not enough for stakeholder groups; they need to be embedded in planning for change in such a way that their concerns are addressed as well as voiced. In one case, a chicken producer pointed out that in a place where the urban expansion and the demand for single family dwellings is encroaching on new areas, and natural heritage areas also are given priority, the only land available for conversion by default is farmland. Lack of coordination can mean that a mid-size farm faces piecemeal by-laws and regulations, some designed with urban areas in mind and not applicable to farms (or constituting unnecessary barriers) with other challenges due to a lack of harmony across different jurisdictions: towns, municipalities, regions and protected areas such as the Greenbelt. Given the size of most viable farm enterprises in southern Ontario, it is likely that farms will have non-contiguous parcels to make up the land they need. These parcels may not all be under the same set of rules and regulations.

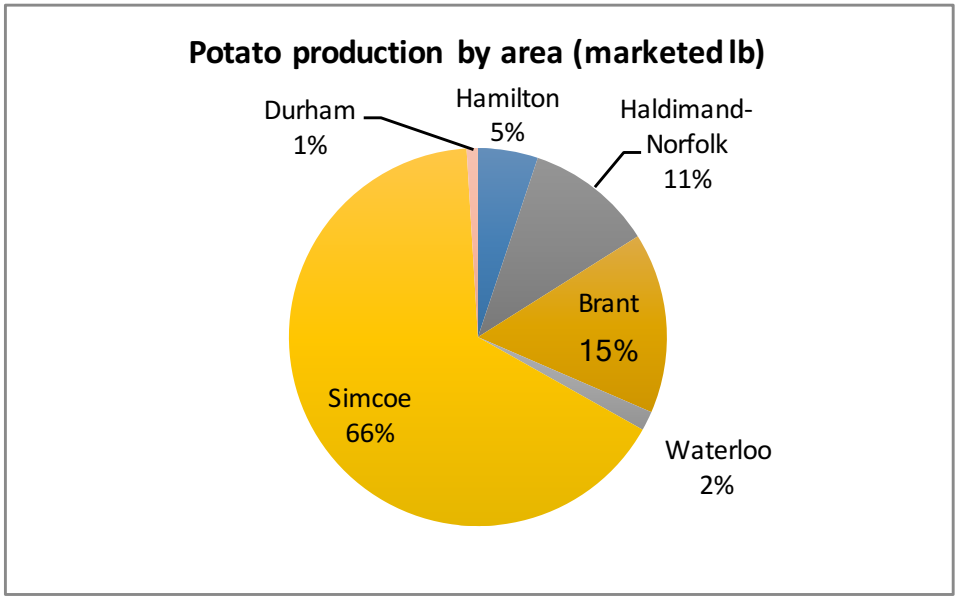
The livestock sectors offer a canvas where the stresses and fractures between different stakeholders – rural and urban, environment and working landscape, animal welfare and economic efficiency – seem to become more clear and more divisive; yet it is also a community that may have some of the best keys to resolution and mediation between conflicting interests. The recent consultation and development of code to transition to the enriched cages for egg-layers is one example of the kind of successful collaboration for change that can lead to long-lasting improvements that work for all stakeholders and preserve the food sovereignty of Canada. The Artisanal Chicken Program is an important example of careful consultation that lead to significant and constructive change.

6.4 Potatoes: problems and possibilities

Although they are less essential as a contribution to a healthy diet, potatoes are a significant commodity in the study area, and are common in the cuisines of many cultures in the GGH. The following section examines the flow of potatoes from field to plate, showing the flow of a product without supply management protections, and with considerable pressure from a globally constituted supply chain. Potatoes also command less brand and variety awareness than apples, and offer fewer possibilities for premiums based on flavour or origin. However, some growers are working to change that, as the research shows.

Although the Statistics Canada tables do not report availability of fresh potatoes as a whole, they show that 22.27 kilograms of white fresh potatoes were available per person annually in 2015. This is in addition to the availability of frozen, chips and other processed product, totalling almost 46 kilograms more per Canadian. Although the optimal diet (Desjardins et al., 2010: 132) recommends an increase from 37.4 kg to 48.6 kg in intake, there are clearly more potatoes available than are needed to meet Canadian's nutritional needs. Nonetheless, the intake of potatoes in Canada is only partially met through Canadian potatoes, and even less through regionally grown potatoes. In addition, the high level of processing that corresponds to most of this intake (which has been translated into a fresh equivalent for this calculation) suggest that the optimal diet would require a shift in processing from chips and French fries to a lower fat, lower salt and lower sugar option. Increasingly, even potato chips, which traditionally are a snack featuring salt and oil, have added sugar or sugar substitutes as a key ingredient.

Figure 21: Potato Production by Area.



Source: Econometrics Research Limited et al., 2014a

In the GGH, the Simcoe area is by far the largest source of regional production. The availability of a packer/ distributors and excellent soil no doubt contribute to this concentration (see Figure 21). Although there are many similarities with carrots, the sector wrestles with significant competition from regions outside the province, and none of the protections achieved by supply management. As in other sectors, supply comes from outside the farm; seed potatoes come mostly from Canada, and some from the US. Replanting from on-farm is said to encourage disease, resulting in a separate industry dedicated to seed potatoes. Research and development is dedicated to identifying new varieties and proprietary varieties that can be sold for value-added attributes of flavour, use or nutrition (see also Box 8).

The flow of potatoes is divided into two separate sectors, table potatoes sold as fresh or frozen and chip potatoes sold for processing. Most table potatoes grown in Ontario go to provincial markets, while a large percentage of chip potatoes go to US processors such as Frito-Lay and regional chippers in Pennsylvania. Growers tend to ship to packers as in the case of carrots; since the market differentiates by variety (unlike carrots), the packers provide packaging intended for specific markets. Half of the production is table potatoes, while the other half is for chips. In the case of chip potatoes, growers will have contracts with mass market buyers or processors that includes price (which can be changed at the time of purchase) and other terms and conditions. Import replacement in Ontario could focus on fresh or chip potatoes; frozen potatoes depend on a variety that is hard to grow, and face fierce competition from big companies such as McCain (a company that began in New Brunswick but is now a transnational company).

Box 8:
Downey Farms

Downey Farms Trevor Downey manages Downey Farms, a large potato growing and packing operation north of Toronto. His grandfather started the business in 1924 with just 100 acres. At that time there were at least 30 potato growers in the area, all selling direct to their markets. There were sales to Frito, as well as various distribution options. Then farms started selling off, changing hands. The Downeys eventually bought the Highland Potato company for distribution; they were already packing at the current operation. Then they moved into selling to Harvey's for their fresh-cut fries, then Swiss Chalet and chain retail stores. They also sold to Schneider's in Cambridge (west of Toronto) for potato chips, an operation that was eventually sold to Hostess.

Downey's father worked with his brother (Downey's uncle) to manage the business after the grandfather's time, with the brother running the farm and the father running the packaging and marketing. Trevor Downey's brothers have worked on the farm but most of them did not end up staying in the industry. Once Loblaw's (the supermarket corporation) built their distribution centre in Ajax, they began to work closely with them. Swiss Chalet had gone national and regional volume was not enough to supply on that scale, so the corporation switched to suppliers on Canada's east coast.

The Downey's business was owned for a short period by a hedge fund in Boston that was planning to build the largest limestone quarry in North America, but public outcry convinced them to curtail their plans. They sold the company back to Trevor Downey, and the land to a farmland investment company called Bonnefield. Trevor Downey continued throughout these changes to manage the operation (the Downey brand was never changed even when the owners changed; the potatoes were still sold under the Downey name).

To supply the supermarkets with consistent year-round product, they have alliances throughout North America, drawing potatoes from one growing region after another as the harvest time comes. He works with growers in Quebec, New Brunswick and as far east as Prince Edward Island. Once the Canadian product finishes around May, he can draw from California and Florida partners.

Recent marketing has moved towards specific varieties, characteristics and proprietary brands. They are assessing the Masquerade brand, that grows well at 7 000 feet in Colorado. They have the packaging and branding for the Petite Merlot potato, and others under their Bistro Fresh label. They work with the University of Guelph on field trials. Their newest addition to the business is a nearby piece of farmland as they explore re-entering the farming side of agriculture.

The potato sector faces familiar problems with mass market power; they can develop a beautiful package for a specific potato variety but because there are no binding contracts, no guaranteed volume or price, the development of branding is at the grower/packer's own risk. Even the new Naturally Imperfect line at Loblaws has required packers to invest in new process and infrastructure to sort and store number twos, which were normally discarded for compost or animal feed. Although technology continues to develop, creating greater possible efficiencies in many sectors, the growers or packers still have to amass the capital to buy the new equipment (see Figure 22). As some growers have the technology that reduces their cost, and others cannot afford it, the sector becomes a kind of arms race, with growers as resourceful and expert with machinery as they are with soil.

Figure 22: Potato packing plant in Ontario

©FAO/ Miller, 2016

The packer sorts and packs the potatoes, and can refuse to pay for any that are graded out in that process. They manage the flows of product by selling some as soon as it is harvested, and bringing in storage potatoes once the short-term ones are cleared out (around October). They control temperature and humidity in storage, and maintain relations with growers in the US to be able to supply product continuously to mass market, where the buyers prefer not to have to change vendors at the end of the season. This preference drives imports as many large producers/packers will contract or even buy land further south to maintain year-round availability for the mass-market buyers.

Despite the advanced planning needed to grow and pack potatoes, the price is dependent on the whims of the global market; if mass-market buyers cannot get the price they want from local growers, they are free to search the world for a better price. As in other sectors, there is a danger of having a load of fresh product rejected at the mass-market Distribution Centre dock, after the sale has gone through and the packaging is approved. Farmers/packers are required to pay a CAD 1 000 handling fee as well as the cost of picking up the load and bringing it back. As several interviewees noted "you are only as good as your last load". Loads exiting from a packer are inspected at a variety

of points to reduce the chance of refusal, culminating at a final inspection station before the load leaves the warehouse. The opportunity to build up long-term trust has clearly been eroded by inequitable consolidation of power in the grocery industry. The destination of rejected or delisted potatoes is lost product, whether it is fed to pigs or the bags ripped open and resorted. As with other items, there is no appeal or complaint process, as the mass market buyers are not dependent on the survival of individual suppliers; there are plenty of suppliers, and only a few buyers. Despite the official regulations, growers can find their prices undercut by growers who are not following the food safety regulations; even if buyers do not take the cheaper product, they can use the offered price to demand that certified growers match the lower price. In general, buyers prefer a short list of suppliers to facilitate their work. A grower can be identified as a "preferred vendor" who is most likely to get the order, but the status can be changed at any time, and the grower will need to find other markets.

Although consolidation has made alternatives for marketing scarce, there is some indication of a shift back to allow individual chain stores to buy from producers in their region. This may be in response to the awareness of the consumer demand. Since regional producers may not have the scale to sell to mass-market warehouses for multi-store distribution, but may find a ready market with local consumers, eroding the sales at the supermarkets. For example, a group of nine Sobey's stores, a national food retail chain, formed the Hometown Grocers Co-op to buy regional product that was not available through the central distribution centre.

Local food has been a challenge for the landscape of consolidated grocery; products that are aggregated at the Distribution Centre cannot be easily returned for sale in the region where they were produced; "local" can mean "provincial" or even "Canadian" for these stores. The Canadian Food Inspection Agency had until recently defined "local" as within 50 kilometres (clearly unachievable for a full complement of fruits and vegetables). Now the definition has been expanded to include the whole province, as well as 50 kilometres over the border to the next province or territory. At this other extreme, consumers are now expected to believe that lettuce from Thunder Bay sold in Ottawa is "local". The potato industry can have a level of traceability in the farm code on the boxes. As distributors that focus on regional food (such as 100 km Foods) expand further, this traceability will be essential for sales to a market more interested in branding by origin.

The potato sector in general shows some significant challenges, with a slow erosion of protections that came first from the barriers to long-distance shipping of a heavy product, and also from cross-border protections which have been eroded by free-trade agreements. There seems to be some market share depression for the potato as well due to consumer trends (e.g. the anti-carbohydrate diets).

Networks

Membership in the Ontario Potato Board (OPB) is mandatory if the grower works more than five acres of potatoes. Don Brubacher, General Manager of the Ontario Potato Board, explained that OPB services include negotiation of contracts with high volume chip potato buyers, assistance with government regulations, advocacy to the government on behalf of the sector and research into new varieties (for price premiums or disease resistance).

On the fresh side, the OPB tracks market price and gives suggestions but cannot regulate the price as they have in the past; there are no binding contracts in the case of table/fresh potatoes. Given the lack of supply management to control volume, the OPB has found that a regulated sector price was not flexible enough to allow producers to respond to competition (by dropping their price). As a seasonal product, the potato sector is also dependent on the Seasonal Agricultural Workers Program for labour. Other producer associations that the OPB works with include the Canadian Potato Council, the Ontario Fruit and Vegetable Growers Association and the Ontario Agricultural Commodity Corporation, which covers non-supply managed commodities.

Summary

The potato industry is an example of the result of lowering provincial and national border protections and managements of a sector, and permitting consolidation of markets to a narrow field. The innovations in packaging and variety show the possibilities for taking a fairly undifferentiated product and developing characteristics (branding, taste or nutrition) that may command a premium and help the industry compete against other growing regions.

SUSTAINABILITY DIMENSIONS OF THE GREATER GOLDEN HORSE-SHOE CITY REGION FOOD SYSTEM

7

Through consultation with the GGH CRFS Task Force, sustainability indicator themes were summarised for each of the areas pertaining to the vision for a more sustainable and resilient city region food system:

- Improve health/well-being and social sustainability
- Increase economic growth, jobs and agricultural viability
- Improve stewardship of environmental resources; improve land base management.

These broad themes were used during key informant interviews and resulted in a sub-set of sustainability action priorities and challenges with associated possible indicators as reported in turn below:

- Land and transportation
- Prices and costs
- Democratic engagement
- Education; bureaucratic processes
- Labour and decent work
- Food access issue
- Waste (included in the previous section, so not further separately discussed).

Suggestions for complex, cross-cutting indicators are included in the separate GGH CRFS Phase 2 report).

7.1 Land and transportation

Land use planning for more sustainable food systems is one part of the equation. The benefits of retaining food production lands (or water) in the GGH are efficient food production for nearby markets, water management and preservation of natural heritage. Conflicts emerge in areas where multiple interests converge as in a city region (Miller, 2016).

The aging farmer population means that the next generation of farmers also face daunting barriers to access to land. In the GGH, the average farm operator age is 54.6, with the highest average in Halton Region (Source: Table 004-0239, 2011 Census of Agriculture; note that Toronto is no longer counted in the Census of Agriculture). New farmers in the GGH struggle to find land that they can afford and where they can depend on secure tenure (through ownership or long-term leases). For some specialty crops, like world crops, the need to be near the urban markets with the right demographics for the crops, as well as to be far enough south to get the right climate for the crops, adds to the barriers.

Additional barriers include concerns about acceptance as a newcomer (particularly from a different ethnic group) in a town with a well-established community going back generations. Sethuratnam, a long-time farm manager at now defunct FarmStart, an organization focused on providing access to land and training new farmers, (Cheng, 2016: 47), "observes the agricultural sector to be invisible to settlement and career services agencies, which subsequently creates barriers for newcomers to enter the industry. Vice versa, newcomers and their relevant knowledge, skills and experiences are mostly 'invisible' to the agricultural industry or severely under-recognized and under-represented." Additionally, the Greater Golden Horseshoe experiences concentrated demand on land through pressures for aggregate extraction; conflicts with other land uses including protected lands, recreational and public lands; and existing and planned transportation corridors.

7.2 Prices and costs of food

The cost and price of food was a frequent theme in interviews. While many people cannot afford to buy food (up to 17.6 percent in the GGH regions), farmers find they cannot afford to sell it either. In general, farm-gate prices remain at 1970s levels in real dollars, while input prices to the farmers, and the price of food to consumers, have all risen steadily (National Farmers Union, 2011). Challenges to fair prices paid to farmers include the power of retailers as they pit one region of the globe against another. In one interview, a potato packer who relies on sales to mass markets reported that Wal-Mart has potatoes on sale at a rate well below his cost of production. Another key informant reported that, in the same year that the cost of fertiliser went up 40 percent, a well-known grocery chain had sent suppliers a letter announcing that all prices would be dropped by 1.45 percent, and that any higher input costs (and therefore requests for higher prices) would have to be proven to them. Many horticultural products (including apples, carrots, potatoes) now flow as commodities through a global market, with prices at the whim of all international trading partners and agreements. New trade deals seal this situation by making it difficult to promote local over import, although there may be some solutions that can be included in contracts that are not identified as trade barriers (MacRae, 2014). The longer supply chains also increase the opportunities for profit-making along the way as well as coverage for marketing and distribution expenses. Mass market has also set private standards above the national standards, meeting their marketing goals to offer better product (particularly cosmetically) than other outlets. The practice further increases waste as product that meets the Canada standards but is rejected and may be discarded, or damaged in transport and re-sorted. The situation speaks to a highly consolidated demand side that leaves the supply side with few options. As Aitken notes (2014: 160), the large retail chains "are politically and socially influential, with corporate lobbying being a major influence on public policy in Canada and the United States. Their economic influence over the value chain also provides them with a degree of social and political influence over the actors in the value chain, which indirectly influences the political system."

7.3 Democratic engagement

Democratic engagement is a key dimension of sustainability as it reflects the extent to which people participate in their food system. Engagement for non-profit and charitable organisations in food, urban agriculture, aquaponics and other food-related activities can improve nutritional levels, reduce social isolation and launch new social enterprises. The projects can create employment and economic activity in low-income areas. Food security organizations can also support policy development and engagement in decision-making, carried forward by staff on behalf of community members. Many health and food security organisations have a range of creative approaches to engaging and consulting with community members. In a group interview, the Simcoe health unit listed several ways they determine community needs, from population surveys to workshops to outreach in schools. The ability to engage community members as well as the barriers, varies from one part of the GGH to another and depends on stable funding. Considerations include urban versus rural locations, barriers to participation – for example, language and cultural differences – lack of trust across different demographics, and access challenges (from the cost of public transit to accessibility for people in wheelchairs). Food justice organisations, such as the Black Creek Food Justice Action Network, have begun to consolidate activities around food justice, engaging community members with migrant farmworker groups, community-driven urban agriculture in low-income and marginalized communities, and workers in precarious employment in food. Food Charter and Food Policy Council models, as taken up by a number of regions and municipalities in the GGH, require a significant multi-year consultation process during development, which may be in itself one of the most important outcomes of an approved food charter or established food policy council. The process tends to be cross-sectoral, engaging food security actors, producers, food entrepreneurs, environmental groups and government representatives.

In the agricultural case, stakeholders reported some shift to governmental committees from advocacy channels. The recent establishment of municipal and regional agriculture committees has created a new pathway to decision-making that may carry more authority than the external groups. Consultations or member-based advocacy of various types are also conducted by various sectoral organisations. However, the reduction in numbers of farmers as consolidation and economic crises have occurred has meant that many farmers engage with several boards, committees and networks, while the pool of available participants is dwindling.

7.4 Education

Educational activities can be grouped by target groups (consumers, workers, producers) and by topic (health, growing food). They may be restricted to a sector, as in on-farm training in new equipment, or generally available, as in a public workshop on how to cook for a diabetic diet. It is likely that the number of educational opportunities are increasing; a review by the Toronto Urban Growers found 93 school gardens in Toronto alone. The Food by Ward study identified 116 community kitchens. These host a range of programmes from healthy eating to cooking from harvest to newcomer groups gathering over a meal of dishes from home (see also Miller, 2013).

Figure 23: Food and employment skill training for low-income residents

©FAO/ Toronto Public Health, 2017

Education can be internal or external to a sector. Large farmers may provide considerable (internal) training for workers and others. A sector-specific training centre may provide training without the concern of losing trained workers to other employers; for instance, the Hospitality Workers Training Centre provides training to any worker in the sector through a partnership between the hospitality workers union and major hotels in Toronto (Zizys, 2015: 21), with three programmes in Toronto linked to employment that provided training in various food sectors (Ibid 2015: 16). The Community Food Works programme found that 39 percent of participants secured employment after the course (Ibid.: 19).

Sectoral networks are also key providers of education. The Ontario Apple Growers provides worker safety training and workshops on the new high-density trellis planting methods. The Greenbelt Farmers' Market Network provides training opportunities for market staff; Sustain Ontario provides toolkits and resources online to support their members who come from many parts of the food system. The Holland Marsh Growers works to educate consumers and government staff on emerging agricultural issues. Farmers also hold or participate in public events to increase the agricultural and food knowledge of community members or students both on individual farms or groups through associations. Many food security organisations report the value and impact of farm tours; despite the expense (transportation, catering, insurance), they show non-farmers about the work of food production in a way that nothing else can achieve. Public health units and community health centres provide considerable training focused on food, from workshops on diet-related illness to community gardens nearby (Miller, 2013). Although some gardening may be included, the focus is on nutrition and access to healthy food rather than commercial food production. The Ontario Federation of Agriculture offers the Six by Sixteen programme, with the goal of training children to prepare six healthy and locally sourced meals by the time they are sixteen (see Box 9 for more information about high school and other school-related educational initiatives.)

Box 9: Food education

Some High Schools offer a special stream for food and agriculture, with curriculum available to address the special focus for students who choose it. Agscape, partly funded by the Ontario Ministry of Agriculture, Food and Rural Affairs, offers agri-food industry curriculum for schools. There are important formal training opportunities at the George Brown Chef School, Durham College's Food and Farming Program, Loyola's programme focused on food technology, the Sandford Fleming Sustainable Agriculture programme, and the Food and Nutrition Management programme at Humber College. Durham College has a full programme stream to train chef-farmers from field to kitchen. The Durham College Food and Farming programme focuses primarily on urban agriculture in eastern Ontario, where climate and soil provide unique conditions that may be under-studied by research facilities such as the University of Guelph or the Muck Research Station.

The Country Heritage Park in Milton has taken a demonstration heritage farm one step further to engage school groups (15 000 students each year) in actual food growing, bee-keeping, etc. They focus on the whole food chain. They are redeveloping curriculum to provide "place-based education". Elevated Eats, an urban agriculture project on the roof of the Yorkdale Mall in the north end of Toronto, focuses on food education and offers "curriculum-based materials for primary school teachers" (GHFFA newsletter Friday July 29, 2016).

Ecosource in Mississauga provides training on the food system and explores food and food production issues from field to plate. Their gardening training engages community members through partnerships with other organisations; they also work with hospitality teachers, food service companies and school boards to get more local food into schools and to engage students with local farms and food. They offer teacher education sessions for York University and two school boards to help insert sustainability, food system and waste issues into the curriculum. Foodshare in Toronto has engaged almost a million people in the school-focused Great Big Crunch, which offers curriculum in addition to the "moment of anti-silence" when everyone registered bites into a piece of crunchy produce.

Much food or agriculture training in the GGH focuses on workplace or business training. OMAFRA, the Agricultural Management Institute (AMI) and commercial providers offer a range of training focused particularly on business development, agricultural practices and food safety. The new food business incubator in Toronto, Food Starter, has a formalised regime of training for entrepreneurs who access the facility. They have also organized an interactive website that gives clients ready access to experts to answer specific questions in a forum format.

Research and education can be directed at maintaining the status quo or effecting broad system change (see also Kornelson, 2010: 104). For instance, Muck Research Station was instrumental in testing and encouraging the now widespread use of Integrated Pest Management, which allows famers to optimize the on-farm use of pesticides. Research can be a key part of the educational work. The Vineland Research Station, with various partners, has explored the development of world

crops that can grow well in Ontario (hardy varieties of okra, Japanese eggplant and other crops). The project has been industry-driven and export-focused, although urban agriculture groups that work with newcomer growers have also engaged in testing the seeds on their urban plots.

7.5 Bureaucratic processes: rules, regulations and red tape

Primary research revealed a widespread concern with undue bureaucratic demands as a challenge to sustainable food systems in the GGH. This concern cut across all sectors and stakeholders (and may be a result of the structure of Canadian society itself). In food security organisations, stakeholders discussed regulations that constrain the provision of fresh fruits and vegetables through food banks. Producers and some planners addressed rules that prevent farms from doing on-farm processing. Small producers and processors addressed the problem of regulations designed for larger businesses. Producers seeking to redirect manure to compost on the farm, or dealing with multiple jurisdictions across different plots of land, reported frustration with the intricate entanglement of zoning, environment and resource protections and a lack of clear guidance by those enforcing regulations. Regulatory difficulties generally focused on issues related to land use, food safety, land severances and rural housing, on-farm processing, environment and animal welfare, as well as integrating markets into cities. Creative solutions are emerging to overcome these challenges. For example, the problems for potential urban farmers are intensified as the same categories of stakeholders in rural areas are even more closely linked and overlapping. A successful motion by a Toronto municipal councillor, along with a coalition of farmers' market advocates, created a working group to streamline permission for new public markets, and to establish Toronto as a "Market City" following the lead of Barcelona and other cities (see Project for Public Spaces). A group of cross-sectoral stakeholders was negotiating agreements for urban agriculture in Toronto's hydro corridors, a project made more complex by the shifting of Toronto utilities from public to private hands.

A deeper investigation into the nature of the complaints reveals several specific attributes of the bureaucracy that lead to frustration for stakeholders. The problems are characterized by a lack of scale- appropriate regulations and a lack of consultation with the experts (farmers, food manufacturers) who experience the impact of new regulations. The perception is that the lack of consultation with those directly affected by regulation can lead to irrational rules. Regulations are often perceived as coming from outside a sector, and not taking the sector's needs or attributes into account. In a positive development, the province has conducted a complex "coordinated review" of interlocking plans to harmonise regulations and plans at every tier that bridge isolated interests such as the environmental and agricultural sectors, or food manufacturing and residential groups. The coordinated review placed emphasis on protection of water and land resources, encouraging more compact urban centres and protection of prime agricultural lands. Through this extraordinary process the province has engaged in extensive consultation and consideration of cross-sector needs and solutions. The coordinated review should stand as a beacon and model for future planning in North America and beyond.

7.6 Labour and decent work

Labour was an issue frequently raised by stakeholders with a focus on opportunities and trends towards decent work in all food system areas. Most jobs in the agri-food sector are in food service, which tend to be precarious jobs with low pay (GHFFA, 2016: 14). Food service (for instance, fast-food chains) do not realize the full potential of food or agriculture multipliers. Revenues for large transnational corporations tend to leave the local economy; expenditures (supplies, management, planning) are made elsewhere. The Greater Golden Horseshoe is a prime location for siting food processing and other enterprises related to food and agriculture because the proximity to significant urban areas ensures ready access to a labour market for skilled and non-skilled workers, as well as necessary infrastructure for business (for more information about farm-based training, see Box 10). The GHFFA report notes that increased production with declining job numbers can indicate an increase in automation (2016: 16). It can also mean increased agricultural consolidation. MacRae reports (N.D.b: 9) that labour can account for around 38 percent of the cost of a food item.

Box 10: Durham Farm Connections

Durham, a GGH county, addressed jobs and training through partnership with the Durham Workforce Authority and the Durham Farm Connections project, as well as a multi-day training in partnership with the University of Ontario Institute of Technology Agricultural Leadership Program. Residents can benefit from Durham College's Food and Farming Program and Durham Farm Connections partnerships with Ontario Ministry of Agriculture Food and Rural Affairs (OMAFRA) for food and agriculture business development training. They have access to the Ontario Agri-Food Venture Centre for the development of food and agriculture related products and businesses. Support for entrepreneurs also comes through the Business Advisory Centre.

On the production side, organic farms have been shown to provide more jobs and greater job satisfaction for migrant workers (MacRae, N.D.b: 13 citing Jansen 2000). Smaller farms (the majority of farms in Ontario) also tend to be more labour intensive, as do farms that grow fruits and vegetables. More than 15 500 migrant workers come to Ontario as part of the Temporary Foreign Worker Program (TFWP), the Seasonal Agricultural Worker Program (SAWP) and the Low Skill Pilot Project (Hennebry, 2012: 1). As MacRae notes (N.D.b: 6), wages do not reflect societal value, but scarcity of workers. Most interviewees who addressed labour as a key challenge argued that migrant workers do work that Canadians are not willing to do. The reasons cited for failed domestic recruitment were that the hours were long, the work was hard and needs to be done quickly. The SAWP supplies seasonal workers to agriculture and other occupations on a restricted basis (the workers are required to return to their home country regularly, cannot access many Canadian social services and are not able to use the programme's residence period to apply for more permanent status). Notably the newly tabled Food Policy for Canada recommends "the Government, in partnership with provincial and territorial governments, take steps to ensure sufficient labour is available in the agriculture and agri-food sector, including through the temporary foreign workers program to attract and retain talent, with a possible path to permanent residency" (Government of Canada, 2017: 29).

Finally, as activists and researchers have pointed out (Hennebry, 2012: 16), the precarious employment and dangerous work in Canada is characterized by racialized labour. The food system depends on people of colour who enter as migrant workers or take the low-paying food service and preparation jobs further along the supply chain. A movement has grown rapidly around these issues. As the Black Farmers' Collective farmers pointed out in an interview, the barriers exist across the food chain for people of colour hoping to enter agriculture, and for the preponderance of people of colour in food insecure communities.

7.7 Food access issues

This section reviews stakeholder input to the key topic of food insecurity in the Greater Golden Horseshoe. Food insecurity affects at least one in ten families in the GGH (and almost one in five in some areas). There are champions, innovations and possibilities in the GGH, enough to create a food system where everyone has access to healthy food. As wage increases have not kept pace with food prices, it is likely that people are trying to spend less on all categories of household expenditures, including food.

> "Results show that a shift of approximately ten percent of currently cropped hectares to the production of key nutritious foods would be both agriculturally feasible and nutritionally significant to the growing population." Desjardins et al. (2010: 129) for Waterloo Region, Canada

Although food production and food security goals tend to be de-linked, they are not necessarily incompatible. A city region lens seeks to create linkages between all parts of the food system and across the urban-rural divide. In particular, this lens has the unique goal to combine food access goals with food production goals. A 2013 report (Miller, 2013: 5) found that the non-profit and charitable sector, serving meals to people facing food access challenges at no or minimal charge, was spending millions each year on food. Much of that expenditure necessarily comes from public funding, and much of it is spent at local discount supermarkets at retail prices or at transnational food service distribution companies. If these expenditures were shifted to wholesale and directed to local producers and distributors, more of the money would stay in the local economy and more of the food could be fresh and healthy with minimal processing[1].

The Greater Golden Horseshoe has numerous examples of innovation and commitment to reduce food insecurity in food banks and community food organisations (see further chapter 9, this document and the separate GGH CRFS Phase 2 report). The solutions tend to be regionally focused, both for supply and for distribution. Among the interviewees, food bank organizations are rethinking their model in many cases to focus more on logistics streamlining, fresh food and regional production, taking on many of the characteristics of the education-focused community

1 See also Erin Nelson report on VON Windsor: nourishingontario.ca/wp-content/uploads/2014/06/VON-Case-Study-FINAL.pdf .

organisations. As the farmgate prices have been squeezed by powerful grocery corporations, food banks have recognised the value in redirecting their funds to healthier food that benefits the local economy. For marginalised groups, the struggle between the various models is resolved in yet another way through organisations such as the Afri-Can Food Basket, Black Creek Community Farm and the efforts of the Black Farmers Collective. These organisations insist that growing and distributing to marginalized groups must be owned and operated by members of the community themselves.

In reorganising and improving food insecurity solutions, and moving away from the emergency food provision model, the organisations offer the gamut of assets, from good logistics, ordering and distribution systems to good relations with regional production and aggregation centres such as the food terminal or distributors. Although these attributes rarely seem to unite in one organisation, across the sector a transition towards healthy, affordable food for all sourced as regionally as possible is definitely shaping strategies and decisions.

8 VULNERABILITIES OF THE CITY REGION FOOD SYSTEM: WEAKNESSES AND THREATS

Although not originally identified by the Toronto CRFS Task Force as a critical issue, the issue of risk and vulnerability to political and other change or shock emerged from the research. Points of vulnerability and risk that were highlighted by the research include:

- **Large power inequities in transactions** (e.g. between the corporate food buyers and the farmers)
- **Limited choice** (e.g. the lack of fresh food in high-volume donations or commercial farm sales that are largely limited to the options of mass market or export)
- **Unstable funding**, particularly for non-profit and charitable organisations for whom grant funding is focused on programme start-up and not operations or existing successful programmes
- **Dependence on volunteers** for programme delivery (as in many school food and food security programmes)
- **Climate change shocks in agriculture** (e.g. frequent crop failures as in the apple sector, Box 11)
- **Climate change shocks in food** (e.g. increased price of food during the California drought and increased risk in urban areas with only a few days' supply of food on hand)
- **Succession and access challenges** for farmers
- **Reductions in the patchwork of social assistance** (e.g. recent cuts to key supplemental income for food left many low-income people with increased food insecurity as well as challenges in managing diet-related illnesses).

The level of each of these challenges can be included in a complex indicator list. Redressing these issues conjures the possibility of systemic solutions:

- Systematic social assistance that recognizes the international right to food
- A national school food programme instead of individual, volunteer-dependent programmes
- Government support for the next generation of farmers regardless of their approach
- Long-term planning by appropriate government levels for strong food and agricultural systems
- An approved national food policy with budget and timeline for implementation
- Support for diverse markets
- Measures to reduce monopoly control in any economic sector
- Access to multi-year funding and funding that supports the ongoing operation of successful programmes including core funding
- Research into climate-resistant agriculture (drought-tolerant varieties, cropping diversity, frost-hardy fruits[1]).

1 See Gaudin et al. and The Global Alliance on Climate Smart Agriculture. GACSA: www.fao.org/gacsa/about/en/

Box 11: Climate change shocks in the apple industry

The environment is a crucial part of the supply chain; apple growers watch and track the weather patterns and predictions in considerable detail. Uneven weather patterns have a disproportionate effect on apple growing; late frost wipes out the blossoms before fruit is set. Frost can affect only the lower part of the tree, hugging the ground, or have an impact on one region of Ontario and not the nearby ones. Almost all the apple crop was lost in Ontario in 2012 and about half in 2015. 2010 also saw considerable loss. These crop failures represent an increase in crop disaster, matching the reports in other sectors as well. Growers can diversify with other crops or increase vertical integration and access to product from other regions as Martin's has done. Since the apple bloom occurs in a fairly narrow range of time, a single late frost can affect the entire industry (whereas other sectors can explore frost-resistant or late varieties, as well as cover, irrigation or mulches to reduce the impact on plants).

The unstable production in recent years has meant a greater reliance on price supports, such as Apple Crop insurance (covering production losses) and Agri-Stability (covering margin declines from a recent average) (OAG, 2015: 13). The report notes that claims almost equalled the number of growers in every year since 2010. Government funding also contributes to growers who deposit into a risk management plan account.

When interviewees considered the system as a whole, there was a widespread recognition that new systems are needed. Current system-wide solutions can seem at odds with the food systems' best interest at times. For instance, expanding existing systems might be expected to increase production and feed more people, but this comes with flaws that are inherent in the system, including hunger, environmental challenges and ongoing loss of farmland. As the authors of EAT in Sustainia (2015: 8) note, "scaling up current food systems would cause enormous environmental, health and economic risks".

As part of building the social capital needed for collaborations, informal networks help to knit the countryside together but they can also push away those who break their word. Despite the importance of this network building, based on social capital[2] exchanges of trust and understanding, and depending on informal meetings in passing, at the coffee-shop and on committees, this kind of network can also pose a barrier to new entrants who are not from the farming community. The verbal agreements between mass- market buyers and agriculture are a distortion of these traditional agreements, because the relationship is not equitable. They do not carry the same resilience as an agreement between neighbours, where broken promises can lead to ostracism by the community.

There is a fine balance between trust-based relations and exchanges built on financial agreements; in one case, a community-food oriented project found that they needed to formalise relations

2 See, for instance, Robert Putnam's Bowling Alone, as well as Mark Lutz's Economics for the Common Good.

with their for-profit supplier; the lack of shared values had created problems that meant a written agreement was needed to maintain a functioning partnership. Organisations often discover a turning point in growth when trust-based relationships need to be formalized. The change is a transition time when it is often not easy to identify or to get simultaneous agreement from everyone (boards, business owners, staff). The research showed that the difference between legal and trust-based agreements was not so much indicated by scale of the project but was more likely to pertain to relative scale (disproportionately powerful actors working together) or differences in values (food security vs. profit). Current food safety and agricultural supports are cited by people across the supply chain as counter-productive to mid-scale farming, to food security efforts, to mid-scale processing projects and to new farmer enterprises. Groups may differ on their initial ideas of what a solution should be (for instance, in whether prices should be raised to protect farmers or lowered to protect the hungry). Food systems in areas like the GGH face the conflicting challenges of high and increasing urban populations and rural food-growing areas facing pressure from housing, infrastructure, environment and natural resource demands. Such city regions are in a context of rapid change and increasing pressures that open the possibility for transition to greater resilience, economic stability and healthy food for all.

OPPORTUNITIES FOR STRENGTHENING THE CITY REGION FOOD SYSTEM

9

Figure 24:
Urban agriculture

The GGH has many strengths to build from to make the city region food system more resilient and robust. This section focuses on collaborative initiatives as well as innovations in food security. Other examples are available in the separate Phase 2 report.

9.1 Collaborative work in the GGH region

The instances of collaboration and networks in the GGH rely on a variety of approaches and engage different sectors of the populations (see Table 15). The diversity of collaborative activity can eventually shape change across the regional food systems.

9.2 Keys to collaboration

People in every part of the food system identified collaborations that made their own work possible. Groups without access to national support and representation were more likely to be reliant on networks of co-operation and trust-based partnerships so that the depth and longevity of collaborations seemed to increase with sub-sectoral focus. In areas that were less stable in funding and capacity (i.e. many food security organisations), the networks were essential but also less stable.

When interviewees were asked to identify keys to collaboration, there was considerable agreement on the obvious factors such as trust or shared values. Respondents also evidently consider a kind of economic calculation essential as well, i.e. “win-win” arrangements. Short-term collaborations may succeed when goals are clear and shared. Longer-term collaborations (which are essential for systemic change) tend to engage the gears of trust and shared values. However, relations built on trust and relations built on profit for all are not the same. Trust-based relations do not assume an obvious return and reflect the culture of a gift economy. In a gift transaction, trust tends to be the glue for complex relations that feature exchanges of non-equivalent benefits over the long-term, but each transaction occurs without calculation or agreement on what would equal a “win” for the giver: what is owed, how much debt is incurred, when the return will be received. To achieve trust-based relationships, research demonstrates that these networks are more likely to be established, long-lasting and stable at regional rather than city regional levels, even though most actors have many connections and transactions outside the region. Changes to the community create challenges to action that must be understood beyond a nostalgia for tradition or the way things were.

Business networks exist for the retail and restaurant sector, as well as the grocery industry. Provincial and national business networks tend to be disproportionately representative of the larger corporations. In general, small- and mid-scale actors, although plentiful, are less organized in member networks. Sustain Ontario and National Farmers Union both represent these actors but also have limited capacity and resources to achieve their goals. In the realm of food security, there is even less network representation outside the public health departments (which have a variable level of engagement with food security issues and tend to focus on their own region). Food security organisations do not have representation mandated by their participation in any group as in the case of agriculture. Yet they are numerous enough that member fees, scaled to size, could create broader capacity and representation for this set of organisations.

COLLABORATION / REGION/ MUNICIPALITY	FOOD CHARTER	AGRICULTURE COMMITTEE	AGRI-FOOD STRATEGY	FOOD POLICY GROUP OR COUNCIL	LOCAL FOOD MAPS	MUNICIPAL FOOD SECURITY GROUP
Guelph	X	Chamber of Commerce Food & Agriculture Committee	In process		X	X (Round table)
York	X	X	In process		X	X
Niagara	In process	X	X	In process	X	
Halton	X	X	X	X	X	
Simcoe	X	X			X	
Hamilton	X	X	X	X	X	X
Durham	X	X	X	X	X	
Peel	In process	X			X	X
Toronto	X	GTAAC	Food strategy	X	X	Toronto Food Strategy
Waterloo	X		Food system plan		X	Food System Roundtable
Wellington	X		In process		X	
Haldimand Norfolk		X			X	
Brant		X			X	Food System Coalition
Kawartha Lakes	X	X	Agriculture action plan		X	Kawartha Lakes Food Coalition
Dufferin	In process		Interest		X	
Northumberland	X			Food Policy Committee	X	
Peterborough		X		Peterborough Community Food Network	X	Sustainable Peterborough

Table 15: Collaborative initiatives across the GGH by region/ municipality with X denoting completed initiatives

9.3 Agriculture and food-planning collaborations

Agri-food strategies have arisen with the development of publicly mandated agricultural committees, which were established across the region and continue to meet and provide input to municipal decision-making in most areas of the GGH. Only four regions have completed agri-food strategies so far. The agri-food strategies seem generally to reflect or parallel the stakeholder-based plan created by GTAAC and carried forward by the GHFFA for the whole region. This organisation is hosted by the Toronto Region Conservation Authority, and funded by stable public core funding as well as grants for specific initiatives. As in the case of the Toronto Food Policy Council, housed at Toronto Public Health, core funding gives them the flexibility for longer-term planning and multi-year initiatives. Given the engagement of the individual jurisdictions in the GHFFA, the need for regional agri-food strategies may be less pressing given the wider collaborative work.

Food planning remains more geographically narrow, with food charters approved or in process in almost all regions or municipalities. Food security networks also tend to develop in individual regions, and to vary from publicly mandated and supported working groups to organisations outside the government offices (tending to be volunteer dependent and therefore less stable). Food charters tend to focus on the broad food system, including food security issues. Toronto has a more food-focused strategy (and food charter) that reflects the lack of rural areas. Extensive consultations have led to the development of food strategies in that city.

Both food charters and agri-food strategies are established with significant staff and volunteer efforts, and tend to be a multi-year process to establish guidelines for future public activities around food and/or agriculture. Like the official plans themselves, they can be significant milestones for the development of initiatives, particularly if the process engaged community members, non-profit and business representatives, and government. Some arrangements mandate separation between city council and food policy council (e.g. Durham Region), which gives more flexibility to the food policy council to advocate actions that are not yet approved by government, but also may reduce the long-term security of the group.

9.4 Project-based collaborations

Effective partnerships can be project-oriented. The new food business incubator in Northumberland County developed from a multi-region consultation process that included Kawartha Lakes and the Frontenac area in the largest Business Retention Expansion (BR/E) ever undertaken, encompassing an area with a quarter of Ontario's population. The consultation involved nine sub-projects, with a survey using the OMAFRA template that took about two hours to complete. Northumberland County was able to move forward with the multi-million dollar food processing incubator facility based on the information, needs and opportunities identified for the surveyed areas.

9.5 Business network collaborations

Business networks include the Provision Coalition, which brings together large-scale businesses, including global brands such as Coca Cola, and national brands to focus on sustainability assessment and improvement. They make links and provide tools to identify strategies for waste redirection, reduction and other changes that have positive effects on the environment and the corporate bottom line. Business networks can be ongoing, as in the case of the Greenbelt Farmers Market Network to provide support and promotion for farmers' markets throughout the Greenbelt and the Ontario Farm Fresh Association promotes and supports direct to consumer marketing activities (farmgate sales, etc.). Sustain Ontario is a provincial organisation that works closely with the regional GHFFA; they have an active Municipal Regional Food Policy Network that can strengthen the strategies of the municipalities engaged in initiatives through the GHFFA. Organizations such as the GHFFA, as well as the Ontario Food Terminal, are situated at a junction in the web of food systems that allows them to see the necessity of supporting actors across the food chain, and avoiding solutions that benefit one group to the detriment of others. Thus, one of the clearest statements on the problem of price competition came from Bruce Nicholas, General Manager of the OFT, who remarked that each

actor must protect everyone down the supply chain, rather than, for example, offering short-term discounts to ensure immediate sales. This system perspective is a precious commodity in terms of system change in the GGH, and represents an irreplaceable resource for strengthening the system for everyone. FoodStarter as another example is highlighted in Box 12.

Box 12: Food Starter

An interesting business cluster has formed around the new Food Starter food business incubator in Toronto, which provides mentoring, training and facilities for start-up food businesses. Food Starter was formed partly to address the difficulty for new food businesses in establishing the networks they need from scratch. They have established a collaborative environment for the new businesses, easing barriers such as access to capital and infrastructure, and providing business training from the financial structure to the navigation of regulations. Food Starter provides access to networks of suppliers, marketers and other experts that McCauley (Executive Director) has built from over 20 years in food businesses. Their collaborative character is particularly evident in a new partnership with Foodshare and North York Harvest that has developed a dry soup mix that can be used to create quick healthy meals at community agencies, distributed through existing channels by North York Harvest (a small food bank distributor based in the north-end communities of Toronto). Read more about some documented case studies here.

©FAO/ foodstarter.ca

The Pfennings' packing and distribution infrastructure is a business network for collaborating organic growers. The level of consultation and planning the group undertakes with partner growers makes this a significant and successful example of a business partnership or cluster. Martin's Family Fruit Farm has a similar cluster with their network of apple growers. In both cases, there has been significant give and take that surpasses simple procurement from suppliers for resale. 100km Foods also exceeds business partnerships to offer events where the chef (customers) can meet the farmers (suppliers). Instead of worrying that their customers will go direct to their suppliers, 100km Foods sees this as a way to strengthen businesses at both ends of their supply chain, and to keep 100km Foods strong.

9.6 Sectoral networks

As demonstrated in the Holland Marsh section, the region is also knit together by networks that link actors by sector. These include organizations such as the Federation of Agriculture (with provincial and regional chapters), the National Farmers Union and product-specific organizations such as the Ontario Apple Growers that link regional growers to province-wide activities. Some networks are limited to one city or region, such as the Toronto Urban Growers or the York Region Food Security Network. The Organic Council of Ontario and the Ecological Farmers of Ontario link organic and sustainable producers across the province. Additionally, funders may convene stakeholders for consultation and collaboration. The Greenbelt Fund and Friends of the Greenbelt Foundation have engaged in the development of stakeholder groups as part of the support and awareness that they have helped to build around the Greenbelt. This includes many co-operative promotional activities such as the Greenbelt Farmers Market Network, online promotion of local food sources (i.e. Ontariofresh.ca) and some branding activities for Greenbelt producers.

9.7 Values-based networks

The region is also home to some networks and clusters that are almost purely values-based. Foodshare, Toronto Food Policy Council and Toronto Food Strategy have a legacy of nurturing, mentoring and implementing innovation in business and non-profits that stretches over decades (see Box 13). These activities have helped shaped the vibrant community and alternative food sector in Toronto. The values-based network designation applies to food security networks, as well as organisations such as Greenest City and Environment Hamilton that link environment, urban agriculture and food security. These organisations can be leaders in significant networks and tend to be place-based; Greenest City is part of an active community food cluster that includes a large drop-in centre (PARC), the West End Food Co-op, a church, the new Parkdale Neighbourhood Land Trust as well as the umbrella Parkdale Food Network. The mobility that characterises urban environments can threaten the strength of these networks, as residents may move on after a few years, leaving a gap of knowledge and lack of continuity for the networks they leave behind.

Food networks ebb and flow depending on the need. For example, a network has formed to advocate for improved access to public lands for urban agriculture in Toronto; the group includes Toronto Urban Growers, relevant City of Toronto departments, Hydro One and North York Harvest (a food bank distributor). An integrative approach to community food systems is provided through the case of Headwaters Communities in Action (see Box 14).

Box 13: Foodshare

Mobile food market. ©FAO/ Lauren Baker

Foodshare, a non-profit charitable organisation focused on the community food sector, has been a leader for decades in partnerships that have made lasting improvements to Toronto's food systems. They inaugurated the Good Food Box model, provide a Mobile Market truck to reach neighbourhoods without access to healthy, culturally appropriate food, and operate a wholesale distribution arm for community agencies and School Nutrition Programs across the city. Through their own food hub, they offer regionally produced food along with staples and culturally appropriate foods as a wholesale supplier to community agencies and schools, and through their Good Food Boxes, Good Food Markets, meal programs and the Mobile Markets that go to underserved communities. Though they purchase all the food they provide, their charitable model and long-term relations with the Ontario Food Terminal and regional producers enables them to keep margins tight and fresh food relatively affordable. Foodshare is a unique hybrid economic model in which many of the food hub operations (such as the distribution to schools and agencies) is largely financially self-sufficient, while other initiatives rely more on charitable funding.

Their operations include a training kitchen that works with marginalised groups, a catering enterprise, urban agriculture sites, and community animation for neighbourhoods across Toronto. They also operate a commercial kitchen that provides training for youth facing employment barriers, a catering business, and incubation for healthy school cafes.

Each project comes about as part of a collaboration; these may form only to complete a project, may continue on to other projects, or may shift their relation to Foodshare as they become more independent. Food businesses and projects have been housed during start up at Foodshare's downtown warehouse, including 100km Foods and the Not Far From the Tree gleaning project. They have sponsored the Black Farmers Collective and other organizations as they develop self-sufficiency. Although Foodshare is a charitable organisation driven by their mission, mission and values, they have been instrumental in creating hybrid economic solutions or social enterprises that address food security challenges without depending fully on donations and outside funding.

Box 14: Headwater Communities in Action

Headwaters Communities in Action has created a framework that includes community well-being reports (following the Canadian Index of Well-Being), five pillars of a healthy community and an assessment of community assets in relation to the five pillars. The group represents a number of the regions within the GGH, including Dufferin, Guelph and Wellington. They have identified four asset categories in relation to the pillars, including human, social, natural and financial/built assets. The framework was built on consultations to identify the priorities of community members from 2008–2011. In 2012 the group began to roll out programmes based on the local priorities. The area has also created its own Headwaters Food and Farming Alliance (HFFA). The HFFA has created a hub that organizes and coordinates the engagement of government representatives as well as other groups

9.8 Community food organisations – food security focused innovation

Some organisations, such as the new community food hub in Cannington, act as convenors of organisations that address food insecurity in different ways, providing meals, programming and community gardens. These organisations also focus on regionally produced food, although not always. In aggregate, such a hub meets the goals of a community food organisation, although the individual programmes and agencies remain independent of one another. Many food banks also house programmes or organisations that provide the programming goals while the food bank focuses on distribution. Similarly, Halton Food for Thought organizes food programmes for 114 different school sites and works with a range of collaborators including thousands of volunteers. They work with the Nutrition for Learning warehouse in Waterloo and others to link schools to healthy food distribution; one agency goal is to increase the level of local food in the mix. Partners in Niagara have also convened to explore the possibility of a community food hub there. Community Food Centres © and other community organisations start from the goal of fresh, local food for all. They combine programmes on growing and preparation with healthy community meals and food bank efforts that mobilize financial and food donations to provide healthy food for distribution. The Seed in Guelph offers one example of this approach to community food provisioning (see Box 15).

Some organisations approach food insecurity largely from the point of view of helping people grow their own food in community gardens (e.g. Greenest City in Toronto, Ecosource in Mississauga) or a strategically located urban farm (e.g. McQuesten Urban Farm in Hamilton). They tend to do little distribution, but offer shared meal preparation and consumption from the harvest to participants. The City of Hamilton has provided leadership in this type of endeavour by embedding urban agriculture in their planning documents, facilitating the development of such projects. Toronto also has an extensive list of community garden projects, including school gardens, represented by the Toronto Urban Growers.

Box 15: The Seed

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The Seed in Guelph has created a hybrid economic model, working with the six largest emergency food providers in Guelph and others to shift their purchases towards healthier and more affordable food. The Seed aggregates their orders and bulk purchases through a warehouse in the terminal; much of the food is regionally produced. The Seed offers a Garden Fresh box through the Guelph Community Health Centre, which relies on volunteers to host and distribute the food sourced from local farmers where possible and from a nearby Mennonite distributor, Jay West. The latter is a project dating from around the same time as the nearby Mennonite Elmira Produce Auction Co-op (for more information see Miller, 2010, From Land to Plate: the dilemmas and victories of alternative food distribution in Ontario). It provides distribution services of fruits and vegetables for people who do not have time to go and bid at the auction. The wholesale model helps to maintain price points at the terminal rates for farmers who were forced to sell below cost through the auction process (one of the main drawbacks of the produce auction model).

The Seed is also exploring the economic and nutritional impact of their boxes with the University of Guelph. Through the Pod (warehouse) operations they are able to track changes in what the agencies are providing to test the impact of their new supply programmes and to revise as needed. They are initiating a feasibility study for a Local Food Brokerage to source local food for institutions, as well as a regional food hub to act as a local food terminal.

9.9 Food banks

Food banks staff reported various innovations to reimagine emergency food provision, to expand related programming and to focus on distribution and improving supply through purchasing. Good Shepherd, as the largest food bank in Hamilton, have moved from a traditional food bank model, to operating a warehouse and a supermarket style distribution integrated with social service programming. Their shelter has increased the opportunities for people to buy their own food and prepare it for themselves or their immediate family. Kalinowski (interview) made the interesting point that true cost accounting of donated food would show that it is unsustainable financially, as well as not being a long-term solution to hunger. Some food banks such as Daily Bread in Toronto and the Mississauga Food Bank have focused on creating strong logistics programmes, and tracking client needs through rich longitudinal databases. The Mississauga Food Bank uses the Link2Feed programme for online ordering and to track purchases. Several areas within the GGH have planned, tested or developed food access solutions that aggregate and distribute to the community sector. In Toronto's Community Food Flow Project, the research found that small- and medium-scale agencies were not well-served by large (transnational) food service companies. Their size and volume were better fitted to more regional independent distributors, or to direct access from farmers, bakeries, urban agriculture projects or nearby retailers.

Some of the most innovative initiatives converge on the model of a food access food hub. These may seek to improve the nutritional quality of the food provided as well as to access regionally produced food, and to encourage people to prepare healthier meals for themselves. Often these innovations combine with a food bank function in a hybrid organization that relies on donations as well as purchases. For instance, Halton Food for Life (a food recovery agency) and Feeding Halton (working with farmers to purchase healthy food for food insecure households) collaborate to link food security solutions with regional production. They innovate to address challenges around logistics, as they access the fresh healthy food from farmers in the rural north of Halton to aggregate and bring it to southern urban areas such as Burlington. As described in the next section, policy support and interventions for food hubs emerged as a top priority in focus groups.

POLICY AND PLANNING INTERVENTIONS FOR THE TORONTO CITY REGION FOOD SYSTEM

10

As an IPES (2016: 6) report notes, “Farmers cannot simply be expected to rethink their production model, nor consumers to radically reorient their purchasing patterns, without a major shift in the incentives running through food systems.” Identification of opportunities for change is only a starting point; there must also be an understanding of how change has happened and can happen in the future. The Toronto CRFS research showed that rapid change at one time or another has affected every part of the food system; and that stakeholders can readily make recommendations for future positive change.

The CRFS policy review has several premises:

1) Every stakeholder group can easily identify aspects of their part of the food system that they would like to change;
2) Each group can also identify practical solutions and strategies to achieve the change they want to see;
3) Much of the expertise and capacity, if not actual examples, exist to achieve the change desired.

The CRFS Task Force identified the overall vision as change towards a food system where everyone can afford healthy food that is sourced as regionally as possible from a stable agricultural sector. This next section addresses the question of change more directly; the focus is change that provides benefits and increased sustainability to the food system overall.

As noted in Chapter 5 ‘Describing the City Region Food System’, several factors have driven changes in the regional food system. Primary factors for the GGH include ongoing consolidation of agricultural businesses, loss of farmland that is near markets, reduction in primary and secondary processing options, consolidation in markets, reduction in regional or independent (non-chain) markets, increasing export orientation, social and environmental pressures from increasing population, and ongoing increases in food insecurity and low nutritional outcomes from food.

It is important to recognise the complexities and interactions between what can be conflicting or complementary directions and priorities. Some innovations have a salutary effect in one sector while damaging functions in another, and hybrids are emerging to address various needs. For instance, the success of farmers’ markets has led to by-laws and permitting reviews that can facilitate direct to consumer sales. The success has also led to private pop-up markets that may encroach on farmer sales. Sales in farmers’ market venues has tended to be oriented to the middle class. These markets can fuel the increase in artisanal markets that are not an option for lower-income people (both by price and because they do not feel welcome). Market voucher programmes have been inconsistently funded but are one solution that has been tested in Toronto. Foodshare’s

Mobile Market combines the pop-up market with the good food market approach to get healthy, affordable food to neighbourhoods with limited access to fresh food.

10.1 Stakeholder interviews

As part of the CRFS policy and planning phase, interviewees were asked the following questions:

- What has changed in the food system and what drove that change?
- What is changing now?
- What will or should change in the future?

The examination of change in the past and anticipated in the future can pinpoint the drivers and patterns of food system change to stimulate the change stakeholders want to see. Systemic changes, trends or opportunities for change were identified through interviews and secondary research. The focus has been on change for which assets, expertise and the will (of organizations or policy-makers) already exists. These include:

- Local sourcing at independent retail
- Climate change responsiveness
- Technology innovations
- Direct marketing from farmer to consumer
- Increase in local food at mass market
- Institutional procurement
- Aquaponics and other forms of urban food production.

Stakeholders were asked in interviews to name the changes they needed to improve the outcomes from their activities and thereby strengthen the food system. Needs identified by stakeholders fell into the following categories:

- Mid-scale infrastructure
- Level playing field
- Participation in decision-making
- Financial capacity, allocation of resources
- Scale-appropriate regulations and feasibility studies
- Education

10.2 Key policy recommendations

The most frequently mentioned policy recommendations across the food systems were also policy strategies that have inspired significant collaborative efforts. These are summarised below.

Box 16: Key policy recommendations

The review of stakeholder input provides guidelines for eight key policy recommendations:

1. Develop and support transition to increased mid-scale infrastructure (regional processing, distribution, marketing) in order to reduce resource inefficiency from redundant trade, including traffic congestion and GHG emissions.
2. Establish financial resources that support a range of scales and stages, including small- and mid-scale.
3. Establish scale-appropriate safety and operational regulations and feasibility assessments for mid-scale infrastructure such as regional food hubs.
4. Increase research and educational opportunities directed at regional agriculture and regional infrastructure needs linked to shorter supply chains.
5. Provide sufficient social assistance, through a guaranteed income or other measures, to ensure that everyone can afford to eat locally produced healthy food.
6. Establish a national food policy and a national school food policy.
7. Ensure widespread formalization and implementation of public procurement policies for local and sustainable food (with percentages and budgets to meet policy goals).
8. Revise the labour practices, government support and subsidy programmes to ensure the necessary skilled labour for all food system areas with tenure security and fair compensation.

10.3 Action planning for policy recommendations

The policy recommendations were presented for discussion and prioritization to the CRFS Task Force (see Box 16). Three recommendations were identified as underway (national food policy, guaranteed income municipal and labour policies). Institutional procurement was also deemed to be underway through the institutions as well as in recent projects of the GHFFA. The Task Force recommended ongoing focus on mid-scale infrastructure development, drawing on the first four recommendations. The activities recommended encompass physical infrastructure (food hubs, mid-scale processing facilities, mid-scale transportation solutions) as well as "soft" infrastructure such as financial initiatives and education to expand regional food system engagement for producers and consumers.

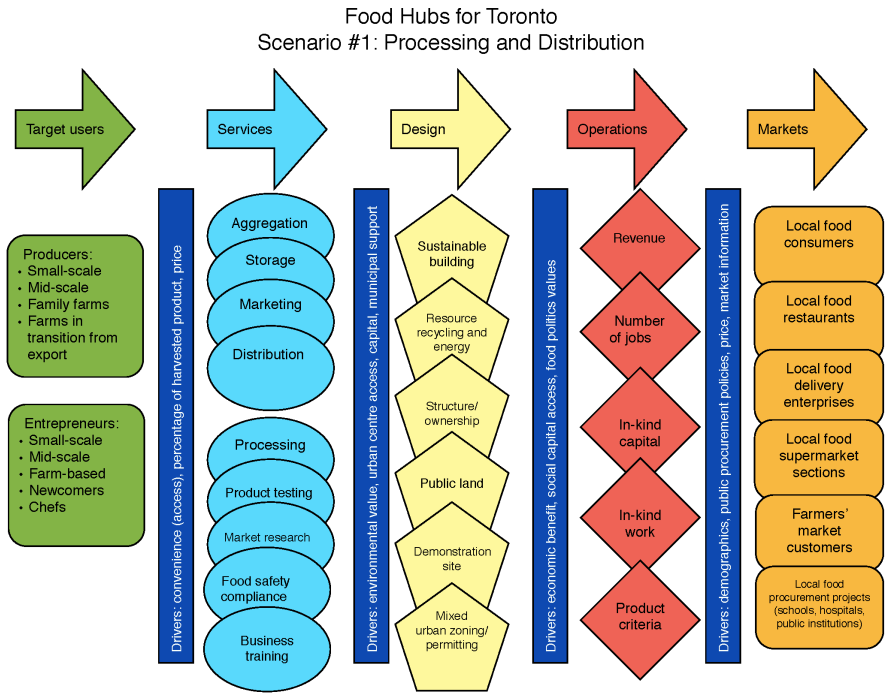
The CRFS research team conducted focus groups and discussions with an emphasis on these topics. Three scenarios for food hub development were explored, including:

1) Aggregation and distribution food hub;
2) Combination food hub with aggregation, distribution and scale-appropriate processing;
3) Food access food hubs (aggregation and distribution to community organisations and others providing food to low-income and marginalized groups).

The consultation yielded action plans to develop the food hubs, with three separate sets of activity (see Figures 25, 26 and 27). Each scenario included a consideration of: target users, services, design, operations and markets with mediating driveers between each category.

The first scenario focused on policy considerations and interventions for both processing and distribution and included producers and entrepreneurs as target users. The services identified are grouped into two categories with the first including aggregation, storage, marketing and distribution, and the second including processing, product testing, market research, food safety compliance and business training. Under the heading of design there were six categories including sustainable building, resource recycling and energy, structure and ownership, public land, demonstration sites, and mixed urban zoning and permitting. Operations included revenue, number of jobs, in-kind capital, in-kind work and product criteria. Marketing as the last category covers local food dimensions including consumers, restaurants, delivery enterprises, supermarkets, farmers' markets and procurement projects with mediating drivers between each category. Drivers linking target users and services included convenience/access, percentage of harvested product and price. Moving from services to design drivers considered were environmental value, urban centre access, capital availability and municipal support. Going from design to operations, the drivers were economic benefit, social capital access and food politic values. Finally, drivers from operations to markets included demographics, public procurement policies and market information.

Figure 25: Policy focus group Scenario 1, processing and distributing



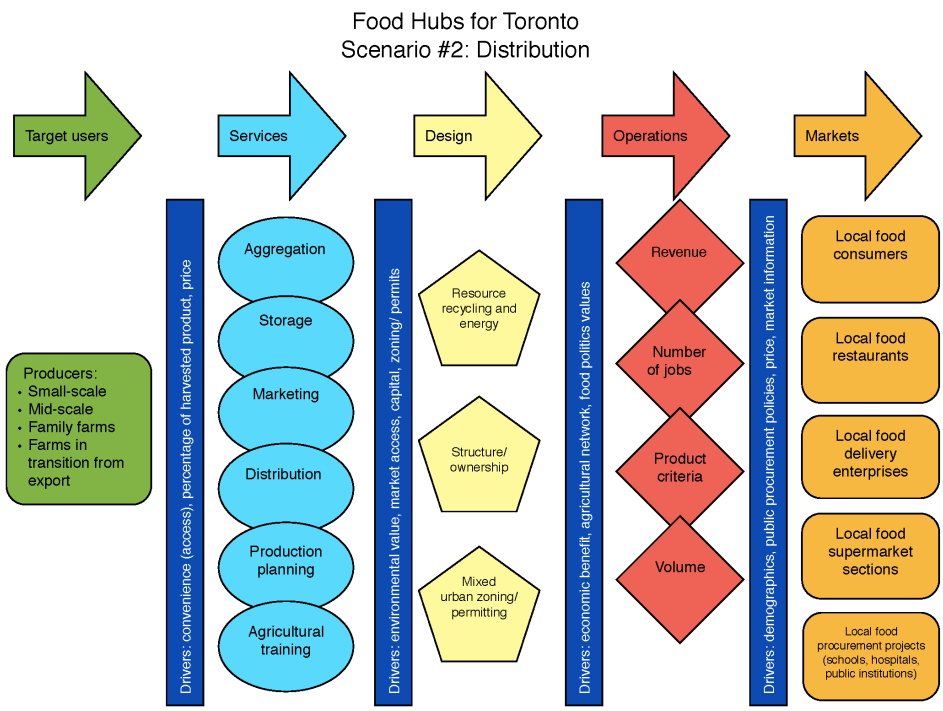


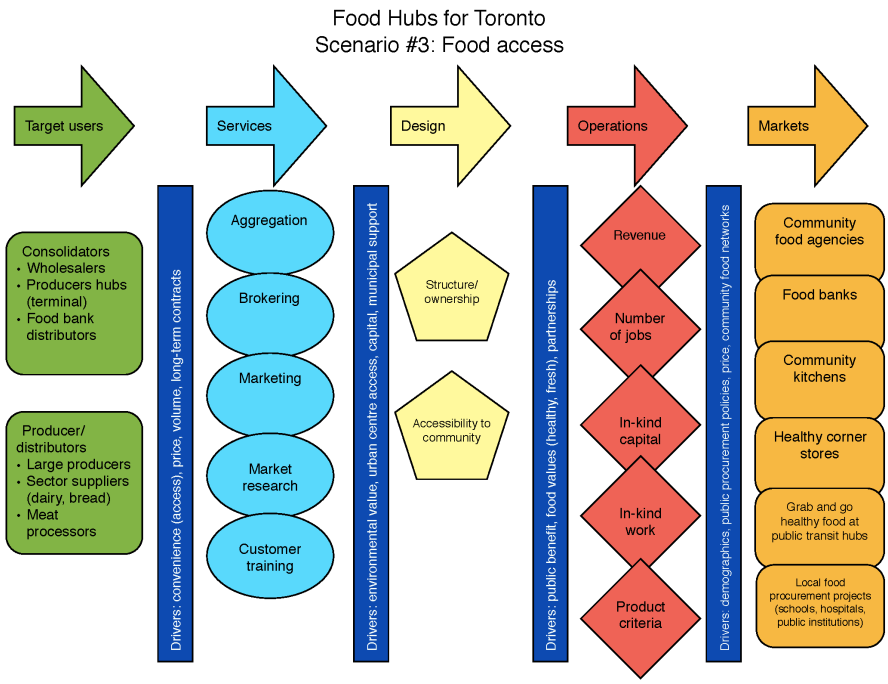
Figure 26: Policy focus group Scenario 2, distribution

As would be expected, the second scenario, distribution, was a pared-down version of the first scenario that had also included processing. Under 'targets' onlyproducers were named. For services only the first tier as aggregation, storage, marketing and distribution were included. Design only included resource recycling and energy, structure and ownership, and mixed urban zoning and permitting. Operations also included revenue, number of jobs, and product criteria. Under markets the required supports were identical, except farmers' markets were not on this list. In addition, the distribution scenario included product planning and agricultural training under services and volume was a consideration on the operations side. Drivers are also very similar between the first two scenarios. The differences of note are between services and design wherein the distribution scenario specifies zoning and permits as one aspect of the more general municipal support identified in Scenario 1. While the drivers from operations to markets are the same, between design and operations, in Scenario 2, the importance of agricultural networks are included, the more general 'social capital access' as a broader context is not included.

In Scenario 3, food access approaches the food system from the pull side and so is different from the first two scenarios. The target users identified fell into two categories: consolidators and producers/ distributors, with services included as aggregation, brokering, marketing and market research, and customer training. The drivers between these two dimensions included convenience/ access, volume and long-term contracts. Under the heading of design, only structure/ownership and accessibility to community were raised, with the driving forces moving to operations as public benefit, food values including whether the food is healthy and fresh, and partnerships. Operational considerations were identical to Scenario 1, while market considerations differed as community food agencies, food banks, community kitchens, healthy corner stores, grab-and-go food at public transit hubs

and finally local food procurement projects. The drivers between operations and markets included demographics, public procurement policies, price and community food networks. As would be anticipated under Scenario 3, there were very strong social justice and equity considerations as part of food access.

Figure 27: Policy focus group Scenario 3, food access



Next steps can involve action planning for stakeholders to further develop detailed plans, addressing challenges and risks, timelines, resources (physical and human), and financial consideration. As Hill and MacRae (1996) have pointed out, systems transitions tend to move through various stages, from efficiency (improving the existing system preparatory to larger changes), substitution (implementing parallel or different practices within the existing system) and redesign. Many of these policy recommendations (particularly the ones shared by several stakeholders) take a holistic perspective, and fit into the system redesign stage.

LESSONS LEARNED AND RECOMMENDATIONS

11

The Toronto CRFS process provided valuable lessons in terms of the specific work in the Greater Golden Horseshoe study area as well as for further work through the City Region Food Systems approach. As one of the most developed and mature municipal food policy realms for a large international city, Toronto provides examples of both progressive policy and food system opportunities. It also offers lessons to other cities developing a City Region Food System approach.

11.1 Methodology

Data availability

The most significant challenge to conducting the research was the lack of available data. At the start of the CRFS project a large database about food was set to come online and was a key reason for selecting the GGH as the boundary over the Greenbelt or the Golden Horseshoe. In the end, however, some of the regions did not give access to their data, resulting in data gaps or limitations. A combination of secondary and primary research was used to complement missing data. Stakeholder interviews and focused case studies provided needed additional sources of information and analysis.

Participant fatigue

While Toronto is a hotbed of policy change and innovation, this comes at the cost of a high level of engagement across most sectors, especially civil society. As a result, participant fatigue exists and it can be difficult to get key people engaged. This proved to be the case for some of the CRFS workshops. While the plan had been to conduct three policy focus groups, it was only possible to get enough engagement for two which were not as well attended as had been hoped. Individual stakeholder interviews (more than 800 hours of interviews were conducted) were an important additional tool used in the project.

Value of the city region food system approach

As both a multi-stakeholder, sustainability-building approach and process, the Toronto CRFS project provided a collective voice for food actors across scales. Similar processes could also foster coherence across jurisdictions and policies and scales, including the Milan Urban Food Policy Pact, the Sustainable Development Goals, the Habitat III New Urban Agenda and the Conference of the Parties (COP) 21. City Region Food Systems thinking responds directly to calls in the literature to provide a conceptual and practical framing for policy through wide engagement across sectors that enable the co-construction of a relevant policy frame that can be enacted through sufficiently integrated policies and programmes that achieve increasingly sustainable food systems.

11.2 Ways forward

Increasing challenges to innovate

Given the very active engagement with food policy, many of the policy recommendations and innovations that could be considered 'low hanging fruit' – for example, establishing a food policy council or developing a food strategy – had already been accomplished in Toronto and the GHG. Beyond the proposed policy recommendations, the work moving forward in the Toronto GGH CRFS is complex and challenging to accomplish. It also requires innovation in unchartered ways. For example, the Toronto Food Policy Council (TFPC) identified the need for more youth engagement and so established one of the first Youth Food Policy Councils in addition to the longstanding TFPC. Other initiatives that could be considered include: to adopt programmes that increase access to farming-related careers for young people; to develop legislation to empower municipal governments to adopt by-laws requiring improved ratios of healthier food retail outlets versus retail outlets carrying less healthy food options; and to adopt measures to increase availability and access to world crops to address the needs of restaurants and newcomers.

Embedded presence of the industrial food system and lack of local food flows

Under NAFTA and the 'modernization' of the food system over the last decades, the GGH, like many other food systems in the USA and Europe, has moved towards a more import–export driven food system. This has been actively supported by both the federal and provincial governments through their agriculture departments and ministries. Research funding, market development and regulations have encouraged large-scale food systems focused on global rather than local markets. With on-going discussions about a National Food Policy for Canada, and the existence of the Local Food Act in Ontario since 2013, as well as the City of Toronto's active membership in the Milan Urban Food Policy Pact, there are signs that supports are growing for a more localised, hybrid version for food in the GGH. For example, at recent pre-budget consultations (Jan, 2018) with the Ontario Minister of Finance, the TFPC called for support for a policy to require broader public sector institutions to purchase more Ontario food for their foodservice operations. This is an important next step for the GGH as serious funding for initiatives that support the transition to a more local and sustainable food economy are still not in place (Toronto Food Policy Council, 2018).

As well, in the context of climate change, migration challenges and diet-related health crises, food is increasingly recognised as a lever for positive change. For example, the City of Toronto was recognised for its work with new Canadian communities through its programme 'Community Food Works for Newcomer Settlement: Using Food as Tool for Settlement and Interaction' that trains and provides certification in food handling, food literacy and employment skills to newcomers to the area. See also the 2017 Milan Urban Food Policy Pact meeting.

Toronto also recognises the importance of food as a key economic driver: "[Toronto is] A City that recognises the power of food as a main driver in our economy to create jobs, wealth and local economic development. Investing in the food sector makes the City attractive to new food businesses, enhances the region's impressive agricultural capacity, promotes innovation, and creates economic opportunities for our diverse and talented residents. Food producers, processors, and the food service sector are essential to Toronto's economic development. One in ten jobs are in this sector. Although the City has supported new food businesses to establish in Toronto, and

contributes to the Golden Horseshoe Food and Farm Action Plan, there is untapped potential to harness the economic potential of food." (TFPC in Dubbeling et al., 2016)

A policy example that signals this recognition was the Residential Apartment Commercial zoning that allowed commercial food and other small businesses to open in previously residential-only buildings. This provides local business opportunities and a more integrated urban space. Provisions were also made for pop-up markets as specific accommodations for food businesses (Dubbeling et al., 2016).

Valuing social capital

While there is increasing recognition of the value of social capital, many civil society organisations must rely too heavily on volunteers. Given the increasing burden exerted on these individuals, the increasing toll of austerity measures and associated cuts to social programmes, the increased need for engagement and the extremely pressing challenges we face, valuing social capital differently needs to be considered.

12 CONCLUSIONS

Results of the Toronto CRFS assessment were widely disseminated throughout the process. Task Force recommendations were incorporated into revisions to engage different sector inputs and encourage wide dissemination and application of the work. Partners supported the communication and promotion of these results through newsletters and other communication opportunities (such as the Wilfrid Laurier Centre for Sustainable Food Systems FLEdGE research project website, and the TFPC's communications). With sufficient dissemination of this final report, the impact of the project can continue to ripple outwards through multiple sectors and through the work of diverse stakeholders long after the end of the project.

The CRFS Toronto project occurred in a context of significant transition and policy activity, with an increase in demands for a guaranteed income and other poverty reduction measures, national food policy consultation process with a policy expected in 2018, a rise in local food policy networks and groups both within government and in communities at large, and the coordinated review of official provincial and local plans. The coordinated CRFS review represents one demonstration that siloed actors who have been focused mostly on their internal activities, policies and changes, can recognise common issues and establish shared solutions across systems, sectors and communities. In most cases, these organisations are involved in shaping and advocating for policy change. The CRFS research shows a trend towards policy change that is cross-sectoral and system wide, suggesting that the potential exists for Canada's food systems to move towards the Toronto Task Force vision for food system change.

Since the end of the GGH CRFS process in June of 2016, there has been significant food policy activity at multiple scales. For example, as outlined in the 2017 Growth Plan for the Greater Golden Horseshoe:

"Municipalities are encouraged to implement regional agri-food strategies and other approaches to sustain and enhance the *Agricultural System* and the long-term economic prosperity and viability of the agri-food sector, including the maintenance and improvement of the *agri-food network* by:

- providing opportunities to support access to healthy, local, and affordable food, urban and near-urban agriculture, food system planning and promoting the sustainability of agricultural, agri-food, and agri-product businesses while protecting agricultural resources and minimizing land use conflicts;
- **protecting, enhancing, or supporting opportunities for *infrastructure*, services, and assets**. Where negative impacts on the *agri-food network* are unavoidable, they will be assessed, minimized, and mitigated to the extent feasible; and
- establishing or consulting with agricultural advisory committees or liaison officers."

In addition, the Canadian Federal Government is moving towards a National Food Policy and released a Standing Committee report in December that includes consensus on the importance of mid-level infrastructure for the future Canadian food system.

While no straight lines can be drawn from the CRFS work in Toronto to these policy initiatives, we can conclude that the strong and long-term food policy leadership in Toronto that is captured in and continued through the CRFS work helped to shape these other food policy initiatives directly or indirectly. There are also food policy initiatives with the city, including a reinvigoration of the Toronto Food Strategy that are informed directly by the CRFS work.

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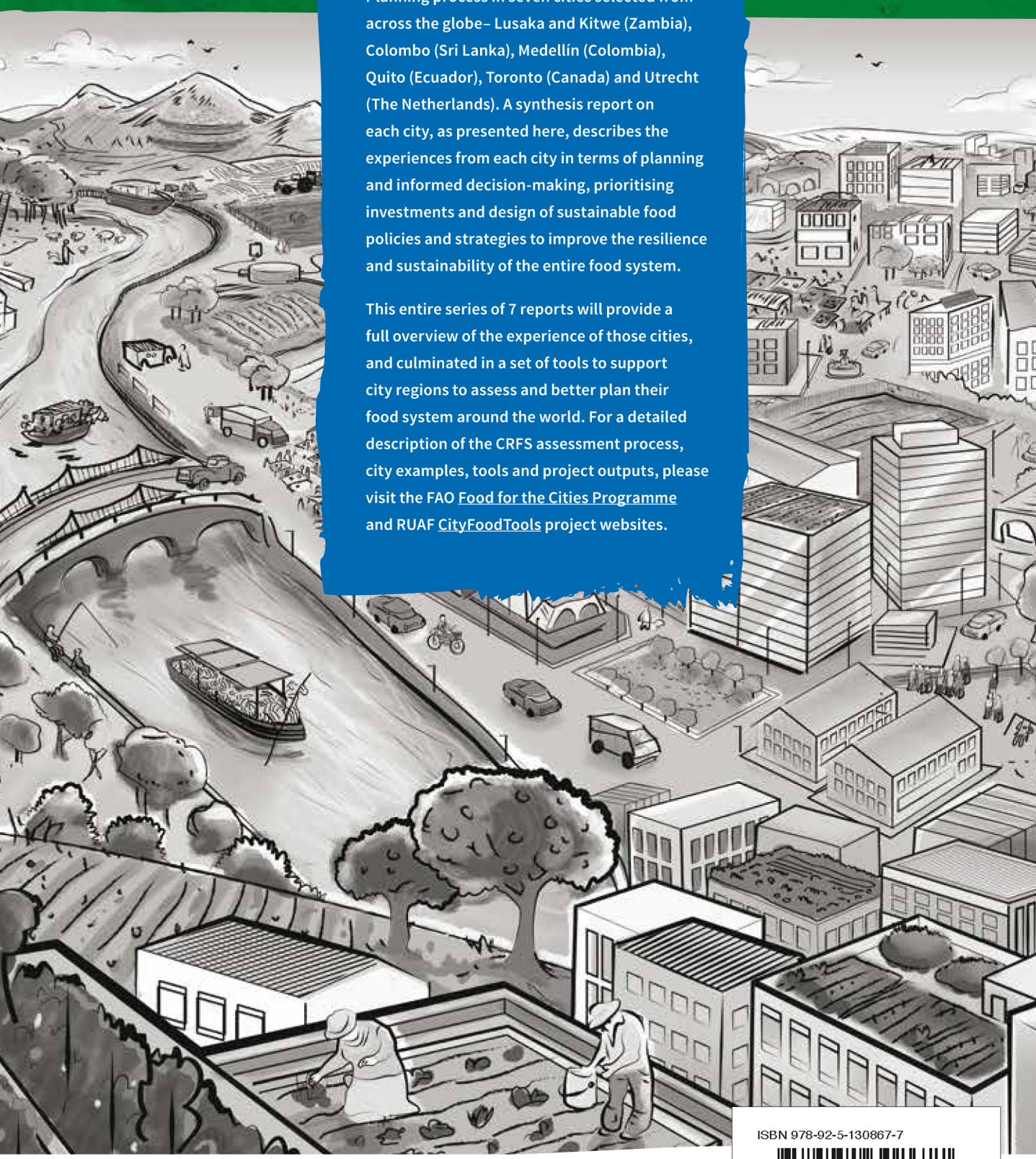
RUAF Foundation and FAO partnered to support a City Region Food System Assessment and Planning process in seven cities selected from across the globe– Lusaka and Kitwe (Zambia), Colombo (Sri Lanka), Medellín (Colombia), Quito (Ecuador), Toronto (Canada) and Utrecht (The Netherlands). A synthesis report on each city, as presented here, describes the experiences from each city in terms of planning and informed decision-making, prioritising investments and design of sustainable food policies and strategies to improve the resilience and sustainability of the entire food system.

This entire series of 7 reports will provide a full overview of the experience of those cities, and culminated in a set of tools to support city regions to assess and better plan their food system around the world. For a detailed description of the CRFS assessment process, city examples, tools and project outputs, please visit the FAO Food for the Cities Programme and RUAF CityFoodTools project websites.



ISBN 978-92-5-130867-7

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CA1111EN/1/11.18

With support from

Federal Ministry of Food and Agriculture

by decision of the German Bundestag

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